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REPORT

OF THE

SECRETARY OF THE NAVY;

BEING PART OF

THE MESSAGE AND DOCUMENTS

COMMUNICATED TO THE

TWO HOUSES OF CONGRESS

AT THE

BEGINNING OF THE SECOND SESSION OF THE FIFTY-FOURTH CONGRESS.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1896.

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REPORT

OF THE

SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, D. C., December 2, 1896.

To the PRESIDENT:

In presenting my first annual report, in November, 1893, I had the honor to quote the following extract from your message to Congress in December, 1885:

"All must admit the importance of an effective navy to a nation like ours, having such an extended seacoast to protect. And yet we have not a single vessel of war that could keep the seas against a first-class vessel of any important power. Such a condition ought not longer to continue. The nation that can not resist aggression is constantly exposed to it. Its foreign policy is of necessity weak, and its negotiations are conducted with disadvantage, because it is not in condition to enforce the terms dictated by its sense of right and justice."

When the above extract was written the work of reconstructing our Navy was in its earliest infancy. The only modern war vessels in course of construction at that time were the *Chicago*, *Boston*, *Atlanta*, and *Dolphin*. These had been laid down by Secretary Chandler under an act passed by Congress in March, 1883, and though much progress in their construction had been made under him, it was not until the second year of your first Administration that any of these vessels was ready for active service. Many difficulties had been encountered in obtaining suitable material for use in their construction. The making of high-grade mild steel plates for shipbuilding was a new industry, and it was impossible to procure at home proper steel forgings for engine shafts or for guns of more than 6 inches caliber.

Fortunately the outgoing Congress on March 3, 1885, carrying out the recommendation of Mr. Chandler, had provided for the construction of two cruisers of not less than 3,000 nor more than 5,000 tons displacement, each; one heavily armed gunboat of about 1,600 tons displacement, and one light gunboat of about 800 tons displacement.

The incoming Congress, on the 3d day of August, 1886, made liberal provisions for building both armored and unarmored vessels, and thus

it was that your first Secretary of the Navy, Mr. Whitney, was enabled to adopt those wise measures for the building up of steel-rolling mills for ships' plates, gun factories, and armor-making plants that made the four years of your first Administration a noted era in the history of the American Navy.

The work so happily begun by Mr. Chandler and so wisely extended and broadened by Mr. Whitney was continued with marked ability by my immediate predecessor, Secretary Tracy, and at the conclusion of President Harrison's term the United States already possessed a very fair fleet of modern steel cruisers, while under authority given by Congress several battle ships and armored cruisers were being actively constructed. But despite all the energy and ability displayed in the development of our naval materiel, and although four seagoing battle ships were then in process of construction, there was, at the beginning of your present Administration, not yet one of these vessels in commission for active service.

In my first report I made special mention of the necessity for still further developing this arm of our naval defenses, at the same time calling attention to the inefficiency of unarmored cruisers as real fighting vessels. The views then expressed are certainly widely entertained, as is evidenced by subsequent naval programmes of foreign countries, and the recent naval conflict in the East, though indecisive in many vital respects, thoroughly demonstrated the inefficiency of cruisers when operating against battle ships.

Treating of this subject, I said in a former report:

"The military value of a commerce-destroying fleet is easily overrated. Cruisers directed against an enemy's wealth afloat are capable of doing great damage. They create consternation among merchants and worry the people against whose property they are directed, but unsupported by ships of the line their operations are perhaps never decisive of a war. During the twenty years from 1792 to 1812, the period covered by the French Revolution, French cruisers and privateers captured many thousands of British vessels and cargoes, but these captures operated more to provoke a spirit of determined hostility among the British people than to create such distress or alarm as would put an end to hostilities. English line-of-battle ships, instead of scattering to convoy merchant vessels, hunted and destroyed the French vessels of war at the battle of the Nile, at Cape St. Vincent, and at Trafalgar. In the meantime, in spite of her losses of merchant ships and their cargoes, England continued to grow rich by her commerce. With her mighty battle ships she cut off Napoleon's communications by water; with her wealth she subsidized her enemies; and it is undoubtedly true that the two great factors in the downfall of the great conqueror were the numerous battle ships of England, with their hardy crews of Anglo-Saxons, and the enormous wealth of the greatest sea power in the world.

"The history of our civil war furnishes a more recent and familiar proof of my statement. The cruises of the *Alabama* and her sister ships were uncommonly successful. Semmes rivaled the exploits of Jean Bart and Du Guay-Trouin. History will rank him as one of the most *famous rovers of the seas.* His success delighted the Confederates,

but it did not benefit their cause. Many, indeed, were the complaints made against President Lincoln because he sent so few ships to search for the Confederate cruisers, but he was too wise to listen to the clamor. The fleets of the United States were not to be thus diverted from their purpose. They blockaded the ports of the Confederacy, they penetrated its rivers, cut off its interior communications, and thus it was that the Navy rendered services to the cause of the Union which the public has never yet fully appreciated. Merchants insured against war risks, and individual losses were borne by communities. Commerce destroying was irritating, but it decided nothing. It would have been ineffectual even if the Confederates had possessed ten times as many cruisers, unsupported as they were by line-of-battle ships.

"If our Government in the future is to have naval strength enough to command the peace and be in a condition to 'enforce the terms dictated by its sense of right and justice,' it must have more battle ships, and must build a reasonable number of torpedo boats."

Believing that our force of cruisers was relatively far in advance, I have continuously advocated additional battle ships, torpedo boats, and light-draft gunboats for special service in our own and foreign waters. Congress, after most careful consideration of the subject, became convinced of the necessity for the development along the lines indicated in the reports of the Department, and despite the difficult financial conditions prevailing during this period has made appropriations for the following vessels, all of which, in addition to the battle ship *Iowa*, armored cruiser *Brooklyn*, and gunboats *Wilmington*, *Helena*, and *Nashville*, have been begun during this Administration:

Vessels authorized by Congress since March 4, 1893.

TABLE I.

Name.	Displacement.	Speed.	Main battery.	Where built or building.	Contract date of completion.
	Tons.	*Knots.*			
Kearsarge	11,520	16	4 13" B. L. R.; 4 8" B. L. R.; 14 5" R. F. G.	Newport News Ship building and Dry Dock Co., Newport News, Va.	Jan. 2, 1899
Kentucky	11,520	16	do	do	Do.
Illinois	11,520	16	4 13" B. L. R.; 14 6" R. F. G.	do	Sept. 26, 1899
Alabama	11,520	16	do	Wm. Cramp & Sons, Philadelphia, Pa.	Sept. 24, 1899
Wisconsin	11,520	16	do	Union Iron Works, San Francisco.	Sept. 19, 1899
Total (5)	57,600				
Gunboats.					
Annapolis	1,000	12	6 4" R. F. G.	Lewis Nixon, Elizabethport, N. J.	Feb. 20, 1897
Vicksburg	1,000	12	do	Bath Iron Works, Bath, Me.	Feb. 15, 1897
Newport	1,000	12	do	do	Do.
Princeton	1,000	12	do	J. H. Dialogue & Son, Camden, N. J.	Feb. 20, 1897
Wheeling	1,000	12	do	Union Iron Works, San Francisco.	Feb. 26, 1897
Marietta	1,000	12	do	do	Do.
Total (6)	6,000				

Vessels authorized by Congress since March 4, 1893—Continued.

TABLE I—Continued.

Name.	Displacement.	Speed.	Main battery.	Where built or building.	Contract date of completion.
Torpedo boats.	*Tons.*	*Knots.*			
No. 3	142	24.5	3 torpedo tubes; 3 1-pdr. R. F.	Columbian Iron Works, Baltimore, Md.	Aug. 3, 1896
No. 4	142	24.5	.....do.....	.....do.....	Do.
No. 5	142	24.5	.....do.....	.....do.....	Do.
No. 6	*182	27.5	3 torpedo tubes; 4 1-pdr. R. F.	Herreshoff Manufacturing Co., Bristol, R. I.	Aug. 19, 1896
No. 7	*182	27.5	.....do.....	.....do.....	Nov. 19, 1896
No. 8	182	26	.....do.....	Moran Bros. Co., Seattle, Wash.	Jan. 19, 1897
No. 9	146	30	.....do.....	Bath Iron Works, Bath, Me..	Apr. 6, 1898
No. 10	146	30	.....do.....	.....do.....	Do.
No. 11	273	30	.....	Union Iron Works, San Francisco.	Apr. 5, 1898
No. 12	117	22.5	3 torpedo tubes; 3 1-pdr. R. F.	Wolff & Zwicker Iron Works, Portland, Oreg.	Oct. 6, 1897
No. 13	117	22.5	.....do.....	.....do.....	Do.
No. 14	†103	22.5	3 torpedo tubes; 3 1-pdr. R. F.....	Herreshoff Manufacturing Co., Bristol, R. I.	Oct. 6, 1897
No. 15	†47	20	2 torpedo tubes; 1 1-pdr. R. F	.....do.....	Do.
No. 16	†47	20	.....do.....	.....do.....	Do.
No. 17	65	20	.....do.....	Chas. Hillman Co., Philadelphia, Pa.	Oct. 7, 1897
No. 18	65	20	.....do.....	Columbian Iron Works, Baltimore, Md.	Do.
Total (16)	2,098				
Submarine torpedo boat.	168	8	.....	.....do.....	Mar. 13, 1896
Grand total ..	65,866				

* Approximate. † Trial displacement.

From the above table it appears that twenty-eight vessels have been authorized since March 4, 1893, their displacement, armament, etc., being distributed as follows:

TABLE II.

Class.	No.	Total displacement.	Aggregate main batteries.
		Tons.	
Battleships	5	57,600	20 13" B. L. R.
			8 8" B. L. R.
			42 6" R. F. G.
			28 5" R. F. G.
Light-draught gunboats	6	6,000	36 4" R. F. G.
Torpedo boats	16	2,098	44 torpedo tubes.
Submarine torpedo boat	1	168	2 torpedo tubes.
Grand total	28	65,866	

Large as the above increase appears, it yet does not suffice to place the United States Navy in a satisfactory condition, if we mean to be able at all times to defend our long line of seacoast, afford unquestionable protection to our citizens in foreign lands, render efficient aid to our diplomacy, and maintain under all circumstances our national honor.

During your present Administration there will have been placed in commission 3 first-class and 2 second-class battle ships, 2 armored cruisers, 4 double-turreted monitors, and 1 harbor-defense ram, making a total of 12 new armored vessels, having an aggregate displacement of 81,517 tons.

In addition to the above-mentioned armored ships, 8 cruisers and 2 gunboats will have received their first commission, making a grand total of 22 vessels, with an aggregate displacement of 117,184 tons, placed in commission during your present term of office, this being by far the largest amount of tonnage put in commission during any Presidential Administration since 1865. Below is a tabular statement of these vessels, with particulars as to displacement, main battery, and date of commission; and following this table is another, showing amount of tonnage authorized, begun, and commissioned during each Administration since March, 1881.

TABLE III.

New vessels placed in commission March 4, 1893, to March 4, 1897.

Name.	Type.	Displacement.	Main battery.	Date of first commission.
		Tons.		
Indiana	Seagoing coast-line battle ship.	10,288	4 13″ B. L. R.; 8 8″ B. L. R.; 4 6″ B. L. R.	Nov. 20, 1895
Massachusetts	do	10,288	do	June 10, 1896
Oregon	do	10,288	do	July 15, 1896
Maine	2d class battle ship	6,682	4 10″ B. L. R.; 6 6″ B. L. R.	Sept. 17, 1895
Texas	do	6,315	2 12″ B. L. R.; 6 6″ B. L. R.	Aug. 15, 1895
New York	Armored cruiser	8,200	6 8″ B. L. R.; 12 4″ R. F. G.	Aug. 1, 1893
Brooklyn	do	9,271	8 8″ B. L. R.; 12 5″ R. F. G.	Dec. 1, 1896
Amphitrite	Low-freeboard coast-defense monitor.	3,990	4 10″ B. L. R.; 2 4″ R. F. G.	Apr. 23, 1895
Monadnock	do	3,990	do	Feb. 20, 1896
Terror	do	3,990	4 10″ B. L. R	Apr. 15, 1896
Katahdin	Armored ram	2,155	4 6-pdr. R. F	Feb. 20, 1896
Total		75,457		
Cincinnati	Protected cruiser	3,213	10 5″ R. F. G.; 1 6″ B. L. R.	June 16, 1894
Raleigh	do	3,213	do	Apr. 17, 1894
Columbia	do	7,375	1 8″ B. L. R.; 2 6″ B. L. R.; 8 4″ B. L. R.	Apr. 23, 1894
Minneapolis	do	7,375	do	Dec. 13, 1894
Olympia	do	5,870	4 8″ B. L. R.; 10 5″ R. F. G.	Feb. 5, 1895
Detroit	Cruiser	2,089	9 5″ R. F. G	July 20, 1893
Marblehead	do	2,089	9 5″ R. F. G	Apr. 2, 1894
Montgomery	do	2,089	9 5″ R. F. G	June 21, 1894
Castine	Gunboat	1,177	8 4″ R. F. G	Oct. 22, 1894
Machias	do	1,177	8 4″ R. F. G	July 20, 1893
Total		35,667		
Puritan	Low *free-board coast-defense monitor.*	6,060	4 12″ B. L. R.; 6 4″ R. F. G.	Will be commissioned Dec. 10, 1896.

In addition to the vessels placed in commission during this administration there will have been completed prior to March 4, 1897, the gunboats *Nashville*, *Wilmington*, *Helena*, *Annapolis*, *Wheeling*, and *Marietta*, and topedo boats numbers 3, 4, 5, and 6.

TABLE IV.

New tonnage authorized by Congress and new tonnage begun and placed in commission since March, 1881.

March 4—	New vessels authorized.	New vessels begun.	New vessels commissioned.
	Tons.	*Tons.*	*Tons.*
1881-1885	23,076	12,363	.....
1885-1889	67,163	34,814	7,863
1889-1893	66,616	93,164	54,832
1893-1896*	65,942	80,778	117,184

* To this table is to be added vessels that may be authorized during the coming session of Congress.

Since submitting my last annual report the following vessels have been completed and finally accepted, and they are now a part of the effective force of the Navy:

TABLE V.

Name of vessel.	Displacement.	Where built.	Date of acceptance or first commission.
	Tons.		
Monadnock	3,990	Navy-yard, Mare Island	Feb. 20, 1896
Terror	3,990	Navy-yard, New York	Apr. 15, 1896
Indiana	10,288	Philadelphia, Pa	May 15, 1896
Massachusetts	10,288	.....do	May 29, 1896
Oregon	10,288	San Francisco, Cal	June 26, 1896
Katahdin	2,155	Bath, Me	June 8, 1896
Ericsson	120	Dubuque, Iowa	June 16, 1896
Brooklyn	9,271	Philadelphia, Pa	Dec. 1, 1896

The *Katahdin* failed to realize, on trial, the contract speed of 17 knots, but as this vessel was of very unusual design, and the failure to obtain this speed was in no sense attributable to the builders, Congress passed a special act authorizing its acceptance.

The work of the various bureaus of the Navy Department engaged in fitting out so large a number of vessels exceeds that devolving upon any former Administration since the close of the civil war, and the present efficient condition of this newly commissioned fleet reflects the greatest credit upon all those concerned in its construction, fitting out, and subsequent internal organization.

At the beginning of this Administration the United States Navy was exceedingly weak in battle ships and torpedo boats, but its condition has greatly improved in these respects, as the following comparative table will show:

TABLE VI.

Table of present strength of seven principal navies.

Class.	England.			France.			Russia.			Italy.			Germany.			United States.			Spain.		
	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.
Battle ships:																					
First class	22	12	34	10	8	18	5	6	11	8	2	10	4	2	6	3	6	9	1	...	1
Second class	12	...	12	11	1	12	5	2	7	2	...	2	7	...	7	2	...	2	...	...	...
Third class	11	...	11	2	...	2	...	...	...	5	...	5	3	...	3	...	...	...	2	...	2
Total	45	12	57	23	9	32	10	8	18	15	2	17	14	2	16	5	6	11	3	...	3
Coast-defense ships	13	...	13	16	...	16	10	4	14	...	...	...	17	2	19	6	1	7	...	...	...
Cruisers:																					
Armored	16	...	16	9	1	10	9	1	10	1	5	6	...	1	1	2	...	2	3	4	1
First class	11	10	21	2	4	6	2	...	...	...	...	...	1	...	1	3	...	3	1	...	7
Second and third classes	51	24	75	10	9	19	3	1	4	16	1	17	3	5	8	13	...	13	7	...	2
Lookout ships or gunboats	19	...	19	12	...	12	...	...	...	...	...	...	11	1	12	9	9	18	22	...	27
Torpedo gunboats	34	...	34	12	3	15	8	...	8	15	2	17	9	1	10	...	...	...	3	4	7
Torpedo-boat destroyers	...	...	98	...	...	3	...	...	1	...	...	1	...	...	11	...	...	1	...	2	3
Topedo boats	...	...	160	...	...	241	...	...	161	...	...	176	...	...	145	3	15	18	19	4	22

The results exhibited by the above table are highly creditable to the country, but it is clear that the great powers with which we are brought into close relationship largely exceed us not only in the number of battle ships and torpedo boats actually in commission, but in their naval programmes for the future. The work of adding to their strength in battle ships and torpedo boats goes on steadily from year to year. It is not contended that we should attempt to compete in numbers with the great navies of England and France, but we ought surely to move up steadily and continually into a higher rank than that we now occupy, and into the place of nations whose necessities are far less than ours. There are now not only in Europe, but in Asia, strong and growing navies belonging to nations with which we must always have the most intimate and delicate relations, and where our citizens are to be found in great numbers prosecuting their legitimate businesses. Our obligations and duties on this hemisphere are recognized by the world, and can not be met unless we are possessed of naval strength. If our merchant marine increases as it should, and no doubt will, the present naval strength will be very far from what it should be.

Nothing will so surely make for peace and give us weight abroad and security at home as a substantial navy constructed of the best materials and manned by the highest intelligence and skill.

CONTRACTS FOR NEW SHIPS.

The act making appropriations for the naval service for the fiscal year ending June 30, 1896, provided for building 2 seagoing battle

ships of about 11,000 tons displacement, and to cost, exclusive of armament, not more than $4,000,000 each. The same law provided for 6 light-draft composite gunboats of about 1,000 tons displacement, and to cost not more than $230,000 each. The awarding of the contracts for the gunboats was noted in my last annual report, but bids for the battle ships were not opened until three days afterwards, November 30.

The act required one of these ships to be built "on or near the coast of the Pacific Ocean, or in the waters connected therewith: *Provided*, That if it shall appear from the bids received that the said vessel can not be built at a fair cost at the place fixed therefor in the proposal, the same may be built elsewhere in the United States."

The bids received from the Pacific Coast were so much in excess of that of the lowest responsible bidder elsewhere that the Department felt compelled to award the contracts for both vessels to the Newport News Shipbuilding and Dry Dock Company at their bid of $2,250,000 for each vessel. The contracts were duly signed January 2, 1896, and the ships required to be completed January 2, 1899.

BATTLESHIPS ILLINOIS, ALABAMA, AND WISCONSIN.

The act of Congress making appropriations for the naval service for the fiscal year ending June 30, 1897, made provision for 3 seagoing coast-line battle ships, to cost, exclusive of armament, not more than $3,750,000 each. The act also provided that the contracts for the construction of these vessels should be made on or before October 8, 1896.

Anticipating the passage of such an act, I had appointed a special board, consisting of Rear-Admiral J. G. Walker (president), Commodore R. L. Phythian, Chief Engineer Edward Farmer, Capt. George C. Remey, Naval Constructor J. J. Woodward, and Lieut. S. A. Staunton, to investigate the questions of general outlines and arrangement and distribution of battery. This board, on May 18, 1896, submitted a report in which, among other things, it recommended that the principal battery should consist of four 13-inch guns mounted in two turrets in pairs, these turrets to be placed as close to each other as the general arrangement of the ship would permit. The board also recommended an auxiliary battery of fourteen rapid-fire 6-inch guns, ten on the main deck and four on the upper deck, all protected by 6-inch armor, and the omission of 8-inch turrets. The substantial features of the recommendations of Admiral Walker's board having been approved, instructions were given to the Bureau of Construction and Repair to prepare specific plans. The work was immediately taken in hand and prosecuted with unusual vigor, so that, although the contracts were to be signed on or before October 8, it was found possible to issue a circular defining the chief characteristics of the vessels in ample time to enable prospective bidders to prepare their estimates.

In compliance with the terms of the advertisement, bids for the construction of these vessels were opened at the Navy Department on

September 16, and contracts were awarded to the lowest bidders, as follows:

Name.	Contractor.	Contract price.	Contract signed.
Illinois	Newport News Shipbuilding and Dry Dock Co., of Newport News, Va.	$2,595,000	Sept. 26, 1896
Alabama	Wm. Cramp & Sons, Philadelphia, Pa	2,650,000	Sept. 24, 1896
Wisconsin	Union Iron Works, of San Francisco, Cal	2,674,950	Do.

These vessels are to be completed each within three years from date of signing of contract.

NEW TORPEDO BOATS.

The act making appropriations for the naval service for the fiscal year ending June 30, 1897, also made provision for 3 torpedo boats, to cost in all not exceeding $800,000, and not to exceed 10 torpedo boats, to cost in all not exceeding $500,000, and to have the highest practicable speed for vessels of their class.

In inviting proposals for the 30-knot torpedo boats, it was deemed advisable, in view of the very high speed to be obtained, to leave contractors as much latitude as possible, and, for this reason, the Department did not prepare designs for these vessels, exacting only the most general requirements, and leaving the details of designs entirely in the hands of prospective bidders.

Under the terms of the advertisement inviting proposals, the following bids were submitted, all on plans supplied by bidders:

TABLE VII.

Bidder.	Price bid per boat.			Estimated displacement.		Weights to be carried on trial in addition to completed hull, machinery, and spare parts.			
	For one boat.	For two boats.	For three boats.	Trial condition.	All bunkers full and other weights on.	Torpedo gear and torpedoes, R. F. guns and ammunition.	Coal.	Crew, boats, anchors, electric plant, equipments, etc.	Total.
				Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Union Iron Works	$227,500			240	298	10	18	7	35
Bath Iron Works		$194,000	$189,000	143.29	169.54	*4.24	9	7.05	20.29
Do		235,000		226.65	288.90	*4.24	11	11.65	26.89
Herreshoff Manufacturing Co	218,000	209,000	206,000	232.14	296.40	10.71	8.93	7.14	26.78
Painton Electrical Steamship and Construction Co	265,000	265,000	265,000						
J. H. Dialogue & Son	260,000	255,000							
Do	275,000	270,000							

*No ammunition or torpedoes.

In view of the unusual character of the vessels some difficulty was experienced in deciding among the several proposed upon the types which would be of greatest service to our Navy, taking into consideration the geographical and hydrographic conditions involved in all schemes for our coast defense. The various technical questions involved were submitted to the chiefs of the Bureaus of Construction, Steam Engineering and Ordnance, and after full consideration of the merits of bids and plans, the Department finally decided to award two of the boats to the Bath Iron Works at their bid of $194,000 each and the other to the Union Iron Works at their bid of $227,500. These boats are to be completed within eighteen months of date of signing the contracts, October 5, 1896.

20-KNOT AND 22½-KNOT TORPEDO BOATS.

For the 20-knot torpedo boats the Department prepared general plans and called for bids under two classes, viz, on plans of the bidder and of the Department, the bidder having the right to bid under either or both classes.

The general dimensions of the Department design were as follows:

General dimensions (approximate only).

Length on load line	101½ feet.
Beam on load line	12½ feet.
Mean draft	4½ feet.
Displacement (about)	68 tons.
I. H. P. (about)	850 tons.
Speed per hour	20 knots.
Armament:	
Two single-deck torpedo guns One 1-pounder rapid-firing gun Two automobile torpedoes 180 rounds 1-pounder ammunition	3.5 tons.

For the 22½-knot boats the Department called for bids on designs submitted by bidders, but also gave the option of bidding on a boat of the following general dimensions proposed by the Department:

General dimensions (approximate only).

Length on load line	140 feet.
Beam on load line	14½ feet.
Mean draft	4½ feet.
Displacement (about)	105 tons.
I. H. P. (about)	1,700 tons.
Speed per hour	22½ knots.
Armament:	
Three single-deck torpedo guns Three 1-pounder rapid-firing guns Four automobile torpedoes 540 rounds 1-pounder ammunition	6.4 tons.

The bids received for the above types of torpedo boat are given in the following table:

TABLE VIII.

Name of bidder.	Class 1.			Class 2: 20 and 22½ knot bids.		
	One boat.	Two boats.	Three boats.	One 20-knot.	Two 20-knot.	Three 20-knot.
Columbian Iron Works	$49,000	a $49,000	a $49,000	$45,000	a $45,000	a $45,000
Moran Bros. Co	59,840	a 58,675	a 56,928	58,240	a 57,075	a 55,328
Bath Iron Works				d 85,000	a 81,000	a 80,000
Herreshoff Manufacturing Co				40,000	a f 37,500	a 37,500
Do						
Do						
Wolff & Zwicker Iron Works	49,000	a 47,500	a 45,000			
Do						
Providence Steam Engine Co		a 51,600	a 48,650			
Lewis Nixon				69,000	a 68,000	
The Chas. Hillman S. & T. B. Co	48,500	a 48,000				
J. H. Dialogue & Son	69,250	a 68,500				
Geo. Lawley & Son, Corporation				61,500	a 57,625	a 56,835

Name of bidder.	Class 2: 20 and 22½ knot bids.					
	One 22½-knot.	Two 22½-knot.	Three 22½-knot.	One 20-knot and one 22½ knot.	One 20-knot and two 22½-knot.	Two 20-knot and one 22½-knot.
Columbian Iron Works	$79,100	a $79,100	a $79,100	b $124,100	c $203,200	c $169,100
Moran Bros. Co	99,216	a 96,239	a 74,255	b 155,953	c 248,212	c 211,234
Bath Iron Works	e 131,000	125,000	a 123,560			
Herreshoff Manufacturing Co	84,000	a 80,000	a 80,000	b 120,750	c 198,750	c 157,000
Do	92,500	a 92,500	a 92,500			
Do	82,500	a 78,500	a 78,500			
Wolff & Zwicker Iron Works	83,800	a 79,500	a 75,100			
Do	85,839	a 81,546	a 77,150			
Providence Steam Engine Co						
Lewis Nixon						
The Chas. Hillman S. & T. B. Co						
J. H. Dialogue & Son	120,000	a 115,000				
Geo. Lawley & Son, Corporation	83,500 102,000	a 80,000 a 98,000	a 78,800 a 97,000	b 162,250	c 256,000	c 215,500

a Each. b Both. c All.
d This boat is about the size of Type I boat, but speed proposed is 22½ knots.
e This boat is about the size of Type II boat, but speed proposed is 25 knots.
f $1,500 additional for galvanizing, making bid actually $39,000.

After careful consideration of the various classes of bids submitted the following awards were made:

Name of bidder.	Type.	Number.	Contract price.	Date of contract.
Herreshoff Manufacturing Co., Bristol, R. I	22½-knot	1	a $80,000	Oct. 6, 1896
Do	20-knot	2	a b 39,000	Do.
Wolff & Zwicker Iron Works, Portland, Oreg	22½-knot	2	a b 81,546	Do.
Columbian Iron Works, Baltimore, Md	20-knot	1	a 45,000	Oct. 7, 1896
Chas. Hillman Co., Philadelphia, Pa	do	1	c 48,500	Do.

a Contractor's plans. b Each. c Department plans.

These boats are to be completed within twelve months of date of signing the contract.

SUBMARINE TORPEDO BOATS.

The act making appropriations for the naval service for the year ending June 30, 1897, also made provision for the construction of two submarine boats of the Holland type, provided that the Holland boat now being built should fulfill the requirements outlined by the Department and embodied in the contract for building that vessel—no action to be taken until the boat now under construction has been thoroughly tested. The first boat of this type is now being built at the yard of the Columbian Iron Works and Dry Dock Company, Baltimore, Md., but will not be ready for her preliminary trials for several months. The problems involved in the satisfactory fulfillment of the requirements laid down by the Department are numerous and difficult, but the contractors have guaranteed their satisfactory solution, and if the contract is fulfilled, the Navy will obtain a most powerful addition to its fighting strength.

VESSELS UNDER CONSTRUCTION.

The following table shows the vessels under construction, where building, and the probable date of their completion:

TABLE IX.

Name of vessel.	Where and by whom building.	Estimates of superintending constructor.	
		Percentage of completion.	Probable date of completion.
Iowa	Wm. Cramp & Sons, Philadelphia, Pa	77	May, 1897
Kearsarge	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	12	Jan., 1899
Kentucky	do	12	Do.
Nashville	do	89	Mar. 1, 1897
Wilmington	do	90	Do.
Helena	do	89	Do.
Annapolis	Lewis Nixon, Elizabethport, N. J	60	Feb. 20, 1897
Vicksburg	Bath Iron Works, Bath, Me	84	Apr. 15, 1897
Newport	do	84	Do.
Princeton	J. H. Dialogue & Son, Camden, N. J	55	June 15, 1897
Wheeling	Union Iron Works, San Francisco, Cal	60	Feb. 26, 1897
Marietta	do	60	Do.
Torpedo boats:			
No. 3	Columbian Iron Works, Baltimore, Md	74	Feb. 1, 1897
No. 4	do	68	Do.
No. 5	do	65	Feb. 20, 1897
No. 6	Herreshoff Manufacturing Co., Bristol, R. I	95	Jan. 1, 1897
No. 7	do	50	Apr. 4, 1897
No. 8	Moran Bros. Co., Seattle, Wash	00	June 20, 1897
Submarine torpedo boat	Columbian Iron Works, Baltimore, Md	55	
Steam tug No. 5	United States Navy-Yard, Norfolk, Va	64	Dec. 31, 1896

RESPONSIBILITY FOR DESIGNS OF VESSELS.

In my first annual report, submitted in November, 1893, I made mention of my action in convening a special board to inquire into the stability of certain vessels of the Navy, and in a subsequent report noted the fact that the scope of the board had been enlarged and that inquiry was being made as to the stability of all vessels then in course of construction. With the exception of a few vessels, the report of this board showed that the ships then building, and about which some doubt had arisen, were in a most satisfactory condition as regarded seaworthiness. The few vessels which were deficient in stability were taken in hand and their defects remedied.

During the progress of this investigation, however, it became apparent that under the regulations then in force no one bureau could be made definitely responsible for ultimate results in the designs of naval vessels. Both Secretaries Chandler and Whitney recognized the necessity for remedying this defect in our bureau system, and both had made recommendations with that end in view. Secretary Whitney prepared a bill providing for a reorganization of the Department under three heads—one to control the personnel, one the purchase of supplies and keeping of accounts, and the third everything relating to the construction and repairs of ships. Congress, however, did not pass the bill.

Mr. Whitney then, in virtue of the powers vested in him by law, made such a distribution of the duties of the various bureaus as to place the entire personnel under the Bureau of Navigation, and took steps to consolidate the purchase of supplies, pay of the Navy, and the rendering of all accounts under the new Bureau of Supplies and Accounts. This, however, was a vast undertaking and could not be accomplished at once. Secretary Tracy took up the task where Secretary Whitney had left off and, by the aid of Congress, had well-nigh perfected this great and needed reform when your present Administration began. Thus, mainly by departmental orders, two important reforms of defects in the bureau system had been accomplished.

The construction and repair of vessels, however, including machinery, armor, and armament, remained distributed under several quite independent bureaus, and even with the most amicable relations existing between these bureaus difficulties inevitably arose as to jurisdiction and responsibility for certain work, as no one bureau was responsible for the success of the ship as a whole.

After mature consideration, I decided that a change was imperative, and on October 2, 1894, issued General Order No. 433. Under this order the Bureau of Construction and Repair was charged with the responsibility for the designs, structural strength, and stability of vessels built for the Navy. This order was intended to secure harmony in the designs of new vessels, and it definitively fixed the responsibility for and mode of procedure in making changes from original plans.

The Bureau of Construction and Repair was to be, unless its recommendations were overruled by the Department, responsible for the resultant general effect upon the ship of every change that might be made after the designs were approved. One of the most important effects of this order was to concentrate under one head full information as to all changes authorized to be made in a ship from its beginning to its completion and to fix responsibility for the proper correlation of work.

Two years of practical experience under the provisions of this general order have demonstrated fully its wisdom, and the Department is now in a position to feel perfect confidence as to the ultimate results to be obtained from new designs, and can fix most definitely responsibility for any failure therein. As an example showing the smoothness with which the bureaus concerned in the construction of a ship are now cooperating, I may again advert to the following facts: The act authorizing the construction of the *Illinois*, *Alabama*, and *Wisconsin* contained the very unusual provision that the contract for their construction should be signed within one hundred and twenty days from the date of passage of the act. This act was approved by you June 10, 1896. On June 11 the Department approved the report of a board which had been previously appointed to pass on the general features of the prospective battleship designs, and on the same day ordered the Bureau of Construction and Repair to prepare circulars defining the chief characteristics of the battle ships and torpedo boats authorized by the act.

The circular proposals for the torpedo boats were issued on June 17, 1896, and those for the battle ships on June 22, 1896. The actual work of preparing designs was prosecuted by the Bureau of Construction and Repair with such dispatch that under date of August 28—only fifty-eight working days after the Department had ordered the designs—the first set of plans and specifications was ready for issue to prospective bidders. The unprecedentedly short time in which plans were prepared, involving so much complicated, technical detail and so many necessary compromises between conflicting interests, demonstrates more fully than can any academic argument the facility with which such work can now be done in the Department, and it seems not too much to say that this satisfactory state of affairs is, at least in part, attributable to the general order placing under one bureau the responsibility for the designs, structural strength, and stability of vessels built for the United States Navy.

CARE AND MAINTENANCE OF THE FLEET.

Reference to the report of the chief constructor, herewith submitted, shows in detail the vessels repaired during the past year. The large increase in the number of new ships in commission necessarily entails greater expenditure for their maintenance in an efficient cruising condition. The estimate of appropriations needed for maintenance is therefore larger than heretofore, but reference to previous reports will *show clearly that the expenditures* for the care and preservation of

the fleet have been economically and judiciously made, and the percentage of original cost expended in maintenance is much less now than formerly.

THE NAVY AFLOAT.

On June 30, 1893, there were 30 vessels in commission, with a tonnage of 62,820 tons.

On June 30, 1894, there were 35 vessels in commission, with a tonnage of 81,463 tons.

On June 30, 1895, there were 36 vessels in commission, with a tonnage of 99,684 tons.

On June 30, 1896, there were 40 vessels in commission, with a tonnage of 122,528 tons.

Adding the *Brooklyn*, 9,271 tons, and the *Puritan*, 6,060 tons, both to be in commission December 10, the total tonnage in commission will be 137,859.

June 30, 1893, there were serving in the Navy 6,459 enlisted men and 1,215 apprentices; June 30, 1894, 6,950 men and 1,144 apprentices; June 30, 1895, 7,499 men and 1,238 apprentices; and June 30, 1896, 8,165 men and 1,378 apprentices.

Of the enlisted men in 1893, 1,640 were serving under continuous-service certificates; in 1894, 1,824; in 1895, 2,270; and in 1896, 2,409.

The records of the Department afford no information regarding the citizenship of the enlisted men prior to April 1, 1890, at which date only 53 per cent of the whole enlisted force (7,516 men and apprentices) were American citizens.

Until July, 1894, when Congress, at the instance of the Department, passed an act affording the necessary facilities, there was no law under which an enlisted man could become a citizen of the United States without leaving the Navy for that purpose, thus forfeiting his continuous service and the benefits to accrue therefrom. Since the passage of the act referred to many enlisted men have become citizens. The Department has been using all its efforts to Americanize our enlisted force, and of the enlisted men 72 per cent are citizens, while 82 per cent of the apprentices are American born.

During this Administration there have been unusual demands for fleets and single vessels to protect the rights of our citizens abroad. Revolutionary troubles have at different times imperiled our commerce in Guatemala, Peru, Nicaragua (on the east and west coasts), Colombia, Costa Rica, Honduras, Argentina, Turkey, China, Japan, Hawaii, and elsewhere. The public is fully aware of the distinguished services rendered by Rear-Admiral A. E. K. Benham and the fleet under his command in breaking the blockade in the harbor of Rio Janeiro, and also of the efficient protection afforded to American interests in China by the Asiatic fleet, in charge of Rear-Admiral C. C. Carpenter, during the Chino-Japanese war.

The Department has given much attention to the drill and discipline of ships and their crews, directing commanding officers to exercise their fleets and affording them every possible opportunity therefor. Rear-Admirals Carpenter and McNair, successively in command of the Asiatic fleet, have exercised it in drill. Rear-Admiral R. W. Meade, while in charge of the North Atlantic fleet, vigorously improved his opportunities for fleet maneuvers, and Rear-Admiral Bunce, who succeeded him with larger opportunities, because longer in command, has discharged his duties as commander in chief in such manner as to meet with the warm approval of the Department.

AUXILIARY CRUISERS AND OUR NAVAL RESOURCES.

The United States is now paying subsidies to a number of fine, swift-sailing vessels which are capable of being promptly converted into useful men of war.

We have many other naval resources—tugs, yachts, and other vessels—that could be fitted as torpedo boats; many vessels that could be adapted and used as gunboats, transports, coal ships, and repair ships, and we have thousands of hardy and brave men accustomed to a seafaring life in our fishing fleets, coastwise trade, and lake trade; but we have no law on the statute books that would enable us to utilize, in case of emergency, a single one of any class of these vessels, or to call into the service a single sailor for the defense of the country over and above the number allowed to our Regular Navy in case of threatened or actual war.

In the opinion of the Department, such conditions should not be allowed to continue. Naval wars hereafter will be short, sharp, and decisive. Whoever may be called upon to consider the possibility of a sudden outbreak of war by the United States, any part of which is to be waged upon the high seas, will be deeply impressed with the utter inability of any Administration under present laws to utilize promptly and efficiently, as we should be able to do, our naval resources.

Congress at its last session appropriated $400,000 toward the armament of our auxiliary cruisers. This sum has been used, but it is totally insufficient. Other sums are needed to supply guns and ammunition with which to arm vessels to be called into service from our merchant marine, and laws are necessary to give authority to the President to contract for and call such vessels into the service, to utilize our Naval Militia, to enlist still other men, and to purchase supplies that may be needed. Until Congress shall legislate upon this subject and give some such authority as that herein indicated, it can not be said that our Government is in condition, as it should be at all times, to meet emergencies as they may arise.

At the last session of Congress the Department framed and sent in a bill proposing legislation upon this subject. This bill passed the Senate and is still pending in that body upon a motion to reconsider. The *subject is again* earnestly urged upon the consideration of Congress.

RESERVE SYSTEM.

The Department, in its last annual report, discussed at some length and advocated a proposition for laying up vessels in reserve, indicating its intention to formulate a plan therefor. In pursuance of that intention, the question was submitted, on the 29th of July last, to a board consisting of Rear-Admiral F. M. Ramsay, U. S. N., Chief Engineer David Smith, U. S. N., and Lieut. H. M. Witzel, U. S. N., with instructions to formulate and report to the Department a general plan which could be put into operation during the coming winter.

This board made a preliminary report in October last to the effect that there is now, in the opinion of the board, no navy-yard or naval station on the Atlantic Coast of the United States that is at present suitable for laying up vessels in the first reserve. In the opinion of the board, as stated in its report, the general requisites are as follows:

> Vessels of the first reserve should not require more than five days to get them ready for sea. They should always be in thorough repair, should have certain officers and men attached to them, should have a certain quantity of coal on board and those articles of outfit and stores that will not deteriorate and that will not interfere with the thorough examination and care of all parts of the ships and their machinery. All other articles of outfit and stores should be in storehouses convenient to the ships, and should be set aside and marked for the ships to which assigned. Men to complete the crews should be in receiving ships or in barracks, either at the reserve stations or at stations having railroad connections therewith.
>
> The place or places for ships in first reserve should have basins or slips, with water of proper depth, in which the ships could be secured; should have docks in which the heaviest vessels could be docked; should have workshops fitted to make repairs of all kinds; should have storehouses arranged to hold the stores of all the ships, with each ship's stores in separate rooms or spaces, and should have receiving ships, or barracks, capable of accommodating the crews of the ships.

The Department has resubmitted the matter to this board, with instructions to reexamine the question with particular reference to the adaptability of different localities, and to report as soon as may be to the Department such place or places as may be most readily adapted to the purposes in view, together with recommendations as to such legislation as may be needed in the premises.

The Department expects to be able to submit to the Congress at an early day during the coming session suggestions for such legislation as may be needed to enable it to provide proper accommodations for ships so that it may establish and maintain a reserve system with the value and importance of which the Department is deeply impressed.

NAVAL MILITIA.

The Department continues to watch with interest the growth and development of the naval militia in those States which, by the acts of their legislative bodies, recognized the necessity of the existence of this branch of citizen soldiery.

Since the formation of the Massachusetts battalion in 1890, it has endeavored by *all means in its power* to encourage and develop these

bodies, whose possibilities as powerful auxiliaries in case of need it fully recognizes. It has loaned them such vessels as could be spared from the Navy for receiving ships or armories. It has, from time to time, whenever possible, offered them the advantage of actual experience on board the men-of-war in commission for service by quartering them on board, drilling them at the batteries and in the boats, and by exercising them at the batteries in target practice under service conditions. It has loaned them such material for their exercise and instruction as was possible to spare from the regular service within the limitations of the existing laws. It has detailed officers of the Navy to assist at stated drills and inspections, and to advise and encourage them in their efforts toward further efficiency, and indeed it has been its constant endeavor to foster and aid them in every way that seemed possible under the laws.

At the close of the last Administration the number of naval militia lawfully certified was 1,794, divided among the States of Rhode Island, Maryland, South Carolina, North Carolina, Massachusetts, California, and New York. From the last official returns they now number 3,339 in the States of California, New York, Massachusetts, North Carolina, Rhode Island, Maryland, South Carolina, Pennsylvania, Illinois, Connecticut, Michigan, New Jersey, Georgia, and Louisiana, and the Department has been informed of the prospective formation of an additional battalion in New York (at Brooklyn) and an organization in Ohio.

The following table shows the numbers of naval militia by States, certified each year by the respective governors, since their first organization in 1891:

State.	1891.	1892.	1893.	1894.	1895.	1896.
California	371	376	301	320	313	417
New York	342	401	410	432	387	383
Massachusetts	238	331	589	448	409	439
North Carolina	101	296	262	168	255	162
Rhode Island	54	58	119	113	100	149
Texas	43	.....	.....	.....	.....	.....
Maryland	.....	124	130	128	174	197
South Carolina	.....	208	204	208	165	165
Pennsylvania	.....	.....	150	217	167	132
Illinois	.....	.....	211	367	199	395
Connecticut	.....	.....	.....	65	71	92
Michigan	.....	.....	.....	73	187	181
New Jersey	.....	.....	.....	.....	216	312
Georgia	.....	.....	.....	.....	52	98
Louisiana	.....	.....	.....	.....	.....	217
Total	1,149	1,794	2,376	2,539	2,695	3,339

Under authority of the act of Congress approved August 3, 1894, authorizing the loan of vessels of the Navy not suitable or required

for general service, the Department has loaned vessels to States as follows:

The *Minnesota* to Massachusetts, the *Wyandotte* to Connecticut, the *New Hampshire* to New York, the *Portsmouth* and *Ajax* to New Jersey, the *St. Louis* to Pennsylvania, the *Dale* to Maryland, the *Nantucket* to North Carolina, the *Camanche* to California, and the *Passaic* to Georgia.

The possession of a vessel to form headquarters for an organization and provide it with a suitable place to drill, is a great incentive to the formation of a naval militia organization and an encouragement toward future efficiency. The usefulness of the Naval Militia depends largely on its knowledge of the care and use of the Navy's matériel, and the only way to acquire this knowledge is through drill and exercise as nearly as possible under service conditions. The Department is constantly receiving requests for additional vessels for this purpose, and it regrets that there are no others now available. It may be possible to assign others of the single-turret monitors, now in ordinary, to this service, but they would require extensive repairs to render them serviceable, for which funds are at present lacking.

Under the provision of the appropriation act passed by the last Congress "signal outfits and pulling boats and their equipment" were added to the list of articles which could be supplied in the allotment to the States of the sum appropriated. The Department will therefore be able to furnish some of the older organizations with serviceable boats of the naval type, which will prove valuable accessories to instruction.

Previous to this authorization by Congress only such boats as were unsuitable for service could be loaned to the Naval Militia, and the small number of "condemned boats" was thus soon exhausted; but boats unsuitable for naval purposes are ill adapted for drills and exercises, and as the money becomes available it will be the endeavor of the Department to supply sufficient serviceable boats and their outfits to each of the organizations.

During the past year, the following drills have been carried out by the naval militia under the supervision and assistance of officers of the Navy.

The Massachusetts battalions were quartered during the week ending July 18 on board the *Minnesota*, which had been towed from her regular moorings and anchored near the entrance of Boston Harbor. The U. S. S. *Columbia* was present during the week and daily drills were had on board. The last day was spent in target practice at sea. Various details from the battalions were also engaged in reconnaissance work. Eighty-five per cent of the entire force were present during these drills.

The Rhode Island, Connecticut, and a part of the New York battalions encamped for the week ending July 18 on Gardiners Island, at the eastern entrance of Long Island Sound. The United States ships *Cincinnati*, *Montgomery*, *Dolphin*, and the tug *Nina* were present, and

frequent drills were had on board and ashore. This encampment was a very important one both from the standpoint of national defense as involving strategical considerations of the important waters and as tending to unify the drills and practice of the various State organizations. This encampment was under the immediate supervision of Assistant Secretary McAdoo.

The New Jersey battalion at Jersey City had an opportunity to drill on board the *Montgomery* on July 16 and 19, which they took advantage of by coming aboard after their daily avocations were completed.

The division from Philadelphia and one from Pittsburg embarked on two "ice boats" belonging to the city of Philadelphia, July 10, and made a cruise down the river. At the Delaware Breakwater, on the 15th, they found the U. S. S. *Indiana*, and were drilled on board for three days at the 6-inch guns and the secondary battery, and on the last day at target practice at anchor, with the same guns and with torpedoes. The percentage of attendance was 100.

The Maryland militia were quartered for their annual tour of service on the *Dale*, which had been towed to and anchored at Tolchester Beach, near Baltimore. The U. S. S. *Amphitrite* arrived at this place on July 10, and on the 11th to 17th, inclusive, the naval militia were drilled on board. The attendance was 85 per cent.

The North Carolina militia was drilled on the *Amphitrite* on the 23d to 26th of June inclusive, and on the 27th had target practice at sea. The attendance was 45 per cent.

The South Carolina divisions were drilled on the U. S. S. *Raleigh*, the first and second at Charleston, on the 15th, 16th, and 17th of June, when they came on board daily from 9 a. m. to 4.30 p. m. The attendance of the first division was 28 per cent and of the second 43 per cent.

The third division came on board at Port Royal in the same manner on the 19th and 20th of June, with an attendance of 34 per cent.

The *Amphitrite* anchored off Brunswick, Ga., and on June 15, 16, and 17 drilled the Brunswick company of the Georgia Naval Militia, with target practice at anchor on the last day. The attendance was 60 per cent. The same ship anchored in Tybee Roads and similarly drilled the Savannah company on the 18th, 19th, and 20th of June. The attendance was 66 per cent.

The Louisiana Naval Militia encamped near Port Eads, La., and were drilled upon the U. S. S. *Raleigh* from 9.30 a. m. to 4.30 p. m. June 26, 27, 29, and on the 30th, en route to New Orleans. The attendance was 34 per cent.

In Illinois the three divisions from Chicago, Alton, and Moline encamped at Camp Logan, and were exercised on the U. S. S. *Michigan* July 27 to 31, inclusive. The attendance was 56 per cent of the Chicago division and 93 per cent of the other divisions.

The *Michigan* then proceeded to Detroit, landed a portion of her crew, and took on board 10 officers and 57 men of the Detroit division

of the Michigan naval militia. They replaced the regular crew and were drilled in their various stations from July 6 to 11, inclusive. Owing to the change of the date for which the ship was available, the attendance was only 52 per cent.

On the 13th the *Michigan* took on board 5 officers and 36 men of the Saginaw division, who remained on board until the 18th, participating in drills and in the handling of the ship and boats. The attendance was 68 per cent.

In California it was not possible to arrange a cruise on the ships of the Pacific Squadron which would suit the exigencies of the service and the possibilities of the organizations. They were, however, given as much opportunity as possible to drill on board, of which they took advantage with zeal and at much personal inconvenience.

As there is no naval vessel stationed on Lake Ontario, one could not assist in the drills of the New York naval militia formed near that lake. An officer was, however, sent to report on their exercises and assist them in their drills. They camped during a week at Chaumont Bay, and were exercised in boats and in naval drills on shore.

All of the officers and 78 per cent of the men were in attendance.

Detailed reports of all of these drills made by the naval officers who supervised them will be found in the appendix. They, with a single exception, highly commend the zeal and intelligence of the personnel, and report their opinion that they will prove an important adjunct in the defense of the coast. The lack of suitable facilities and opportunities for drill is regarded by them as the only barrier to great efficiency.

The department wishes to reiterate the opinion expressed in its last report concerning these organizations. Intelligence, zeal, enthusiasm, and patriotism still characterize their strife after efficiency in face of lack of means and sometimes of encouragement at home.

It has often been questioned whether the class of men who form the majority of the Naval Militia is that which would be needed to reenforce the Navy and to mobilize an auxiliary fleet in case of threatened invasion.

For the last few years the Naval War College and the officers in attendance have occupied themselves with the solution of war problems, which comprised various portions of our coast and frontiers. The means of defense that could be improvised have been carefully considered, even to the selection of material and personnel locally available. From a combination of these problems a scheme for the defense of the coast and frontier has been formulated, and by continued intelligent and systematic work this plan of defense may be perfected, so that at the outbreak of war an auxiliary navy may be quickly mobilized along the coasts, and harbors, rivers, and important strategic positions may be fortified by submarine mines protected by temporary batteries.

The standing Navy will have all it can do to fit out the vessels of war on a war footing and to provide commanding and superior officers for

the large ships of the auxiliary fleet, and there is no organized body so well qualified to assist in much of the work to be done as the Naval Militia, even with their present limited knowledge and experience. Should an emergency arise necessitating the hasty mobilization of the entire naval strength of the United States, a large number of junior officers and gunners will also be required to fill the complements of the auxiliary and mosquito fleets, and even to supplement the force on the vessels of the Regular Navy. Where are these officers and men to be obtained? Those available from the merchant marine are lacking in knowledge of naval routine and drill. They have the important "habit of the sea," but it would require time to make them efficient in the use of naval weapons. They may be depended upon to fill the requirements of the engineer force and to fill many positions on deck, but it is believed that in the highly intelligent personnel of the Naval Militia many will present themselves who, with their acquired knowledge and training, can be more quickly qualified for junior officers and gunners than those coming from any other existing class. The opinion of the officers of the Navy who have been officially connected with them has, as appears from the reports made to the Department, grown to be almost unanimous that the Naval Militia as at present organized will form a powerful adjunct to the local defense of the coast, thus relieving the Regular Navy of duties which would greatly lessen its power by dividing its force, all of which would be needed elsewhere.

To more thoroughly instruct the Naval Militia in the duties which will be required of them in case of mobilization or of war it is the intention of the Department to communicate to them as soon as practicable that portion of the plan of general mobilization and defense which relates to the several States to which they belong, what vessels are to be used, what positions not embraced in the military defenses must be mined and protected by batteries, what signal stations must be maintained, and, in general, everything that must be done to utilize all possible resources for the local defense.

This will be the work of years, but it is believed that by intelligent cooperation between the officers of the Department and the Naval Militia a thoroughly digested plan of mobilization and subsequent operations may be gradually perfected, which will be of inestimable value to the country.

With this plan in view, the Department has granted authority for officers of the Naval Militia to attend the courses at the Naval War College and Torpedo School at Newport, R. I., and during the past summer six naval militia officers have followed a portion of the course at the former and nineteen have taken the prescribed course at the latter school. In this way an acquaintance with the methods found best for the defense of localities and with the practical operation of torpedoes will be disseminated among their organizations.

It should always be borne in mind that the Naval Militia owe a dual

allegiance to the State and the General Government. They constitute a part of the military forces of each State where they exist, and must depend primarily upon State and local support. An organization must get substantial recognition and the good will of the State authorities before it can start on a healthy existence.

ORDNANCE.

GUNS.

During the past four years 213 guns have been manufactured of all calibers, as follows: Seventy 4-inch, seventy-one 5-inch, six 6-inch, forty-five 8-inch, one 10-inch, eight 12-inch, twelve 13-inch. Including the 20 sets of 4-inch, 35 sets of 5-inch, 50 sets of 6-inch, and 2 sets of 8-inch gun forgings, for which contracts have been awarded, we have in course of manufacture at this date 196 guns of all calibers from 4-inch to 13-inch. Of these, 63 guns are for the auxiliary naval cruisers, for which an appropriation was made at the last session of Congress. In addition to the above, one hundred 3-inch field guns, for landing and boat service, are in hand and will be completed in the near future. March 1, 1893, 116 guns of all calibers were mounted aboard ship. At present, including some temporarily landed pending repairs of vessels, there are 366.

From the beginning of the work of reconstruction of the Navy no radical change in the system of gun construction has been made. Other systems have been presented and carefully considered, but the gun built up of steel forgings assembled with a shrinkage by heat is still, in the opinion of the Department, the strongest, most enduring, and most powerful. Improvements in breech mechanism have from time to time been made, and at present the breech closures of our guns of heavy caliber, 8-inch and above, are operated by hand, which has greatly increased their rapidity of fire, besides overcoming the serious disadvantages attending the use of hydraulic, electric, or other power in this part of the working of heavy naval ordnance. The rapid-fire system has been extended to 6-inch guns. The advantages of dispensing with the obturator, of eliminating sponging, by using fixed ammunition, and thus securing increase in rapidity of fire, are too obvious to need discussion. The quality of the steel forgings used in the construction of high-powered guns has improved with experience, and yet the cost of gun material is considerably less than formerly. Taking the cost of the recent purchases as a criterion, the reduction in price for the heavy forgings, 8-inch caliber and upward, has been 21 to 32 per cent. The light forgings, 4-inch, 5-inch, and 6-inch, are somewhat more expensive to make, but these have also been reduced in price from 10 to 19 per cent.

The Department is convinced of the advantages of firing guns by electricity and is endeavoring to perfect and introduce that method,

taking care, however, that it shall make no mistake as it progresses in that direction.

The new field gun is really a rapid-fire gun and will require little or no adjustment of the aim at successive shots.

NEW SMALL ARMS AND MACHINE GUNS.

A repeating rifle and an automatic machine gun, both of the most approved modern caliber, have been adopted and are being issued to the naval service to replace the worn-out and comparatively obsolete weapons heretofore in use.

PROJECTILES.

Our projectiles of all calibers are manufactured by private firms, of which there are at least seven possessing the necessary plant and skill for the manufacture of the various kinds required. The excellent results which these companies have attained in their respective lines of work give to the Government reliable sources of supply for all probable contingencies.

Armor-piercing shell are now being supplied to the Navy, capable of withstanding the test of passing through a caliber of hard-faced armor quite as well as those of earlier manufacture did that of passing through a caliber of simple steel.

A new type of shell, called semi-armor-piercing, has also been developed to meet the modern practice of armoring large portions of heavy ships with armor from 4 to 6 inches thick. These shell will carry large bursting charges through half a caliber of armor and explode after having gone through.

ARMOR.

The first contract for armor was made with the Bethlehem Iron Company in 1887, and with the Carnegie Steel Company in 1890. Up to March, 1893, or during six years, there were delivered 1,949 tons of armor, or at the rate of 286 tons per annum. This was nickel steel, except a few plates the manufacture of which had begun before the adoption of nickel as an alloy.

Since March, 1893, 17,334 tons of nickel-steel armor have been delivered, a rate of 5,000 tons per annum. Of this, 9,000 tons were harveyized. Shortly after I assumed office the contractors made quite an effort to have the Department cease to use the Harvey process of face hardening, but the practice was insisted upon. Since then that or some similar process has been adopted by all the great naval powers of the world.

The 1893 contract is practically completed. There remains at Bethlehem one 13-inch B. L. R. turret of the *Iowa*, which it is expected will be delivered early in December. The delay was caused in the first instance by a change in the design of the turret, and later by the discovery, after the completion of the turret and during the process of

erection, of a defect in the massive port plate, which necessitated the manufacture of another plate and of course involved a considerable loss of time.

Work on the present contract for armor for the *Kearsarge* and *Kentucky* is well advanced, as will be seen by the following table, though some slight delay has been caused by non-receipt from ship contractors of the necessary plans:

	Tons.
Carnegie Steel Company:	
Cast	1,653
Forged	1,415
Carbonized	988
Water hardened	152
Bethlehem Iron Company:	
Cast	1,114
Forged	954
Carbonized	397

In other words, nearly 50 per cent of the armor for these two ships is already cast and forged.

While the Department, during the summer of 1895, was preparing advertisements for armor for the *Kearsarge* and *Kentucky*, I had a prolonged interview with the representatives of the Bethlehem and Carnegie companies, in which I insisted on lower prices. After much discussion and some altercation, these companies agreed in writing that their prices should be at least $50 per ton lower than they had previously received. This was before the Congress met in December. When Congress had convened, the Committee on Naval Affairs of the Senate began for itself an investigation into the prices of armor, pending which the advertisement was held up, until the committee, seeing that its investigation was likely to be prolonged, suggested that the Department should proceed with its contracts. The companies both complied fully with their agreements, and the armor of the *Kearsarge* and *Kentucky* was all let at prices averaging a reduction of $59.54 per ton from previous contract rates, although the requirements were greater. A still further reduction of $9.98 per ton in the price of this armor is due to the decreased cost of the nickel used.

The ballistic plate from Carnegie's representing Group 1 was tested November 14 and was entirely satisfactory. That at Bethlehem should be ready in December.

Since October, 1893, there have been fired nearly 200 shots at service harveyed plates, giving much gratifying information as to the resistance of our armor. As a result, the ballistic requirements have been increased, so that they are now probably more severe than those of any other Government for similar armor.

A reforging process has been adopted which adds materially to the resistance of armor, and this requirement was incorporated in the specifications for armor for the *Kearsarge* and *Kentucky*.

The establishment of *the great hydraulic* press at Bethlehem early

in 1893, and of that at Carnegie's in the spring of 1894, enormously increased the output of armor at those works, so that the maximum capacity for armor of the superior quality now supplied to the Department at each establishment is about 400 tons per month. This could be increased in case of necessity to 600 tons by simplifying machine work and altering the shape of the plates.

Until a recent date it has been the practice of the Department to allow tests of armor plates, guns, and projectiles to be conducted publicly, and even to permit press reporters to attend, and we published to the world practically all the results we had achieved in the construction of a modern navy, some of our annual reports even containing drawing plans, etc., of our ships. All this was well enough for a time. One of our prime purposes in building a navy is the production of a belief in the minds of other nations that it will be well always to let us pursue our ways in peace. The publication of the methods we were pursuing and the results we were achieving in naval construction, marked as they were by such splendid success, certainly did tend to command for us the respect of other powers, and, too, the comments in service papers and foreign criticisms of our work were often of great value. Now, however, foreign experts have all come to fully understand that in our methods we are abreast with the foremost, and it is known that they watch the forthcoming of our annual reports, expecting information such as is not contained in the publications of other Governments. While it is true that military secrets are difficult to keep, this can be no reason for giving all our information away without asking anything in exchange. Reports of bureau chiefs as published will not, therefore, be found as full in some respects as heretofore, and this is especially true of the report of the Chief of the Bureau of Ordnance. For some months past the public has not been permitted to attend tests conducted by this Bureau.

The act appropriating for guns of the calibers of 6, 5, and 4 inch provided that the Secretary in his discretion might have the whole number of guns appropriated for, or a portion of them, built by contract. The Department, looking upon this provision of the law as an indication that Congress thought it wise to establish another gun plant upon which the Government could call in case of an emergency, has awarded a contract for building twenty 4-inch guns and mounts for the auxiliary cruisers to the American Ordnance Company. This company has constructed all the R. F. guns of smaller calibers used in the naval service, and has, therefore, the necessary skill and experience to insure the proper performance of its contracts. The Bethlehem Iron Company has completed a large part of an order for 100 guns of the large caliber for the army, and the bringing of the American Ordnance Company into the field of competition will insure, in addition to the Government plant, two establishments in the country capable of manufacturing high-powered guns.

MAGAZINES.

The Department has been greatly hampered by lack of facilities for storing and handling ammunition for the supply of ships. The last Congress provided for the purchase of the necessary ground and the building of a new magazine near Norfolk. The land has been purchased and the magazine is approaching completion. This magazine will afford ample facilities for that locality. The War Department readily granted additional ground for the magazine at Fort Mifflin, and buildings which will furnish the necessary accommodations there are now in course of construction.

GUN MOUNTS.

The most important recent improvement in the batteries of ships has been in the mounts for guns of various calibers. This betterment has consisted mainly in the simplification of the mounts and the application to the larger calibers of the principle at first employed in the rapid-fire 6-pounders, by which the recoil is taken up in a closed cylinder filled with suitable liquid, the gun being returned to battery by means of springs. The 12-inch mounts for the *Iowa* were constructed upon this principle, which dispenses with the use of the hydraulic piping, always hitherto considered necessary for the manipulation of these heavy guns.

In designing the arrangement of the batteries of our new battle ships the Department has aimed to provide that every turret gun shall be able to fire upon any point lying within a large angle on either beam of the ship, and that every broadside gun shall be able to fire within the same angle on its own side. This principle, is most forcibly illustrated in the designs of the *Kearsarge* and *Kentucky* and of the *Illinois, Alabama, and Wisconsin.*

The supply of ammunition for all guns has been based upon the rapidity of fire of the several calibers, with the expectation that the supply would enable all the guns to continue their fire for the same length of time.

POWDER.

The supply of ammunition is at present limited to a complete outfit for each vessel in commission, which is totally insufficient. The last Congress appropriated $250,000 for spare projectiles, but this would not be enough to replace those now on board ship, and in case of war it would certainly not be prudent to have on hand a less supply of ammunition of all kinds than would be necessary to duplicate our present stock. It is very difficult to obtain promptly satisfactory powder for the larger calibers of great guns, and the Department therefore earnestly recommends that an appropriation be made for a supply of powder to be available in emergency.

Experience has demonstrated the necessity of abandoning the methods in use prior to 1894 of manufacturing smokeless powder. It

was found that the powder made according to the old formula would not keep; but new methods have been adopted, which have produced the most satisfactory results.

A moderate quantity of such powder for the small rapid-fire guns has already been manufactured and is now in store at the navy-yard, New York.

The new field gun will be supplied with this kind of powder.

Several private firms in the United States have indicated their willingness to undertake the manufacture of smokeless powder on the specifications prepared by the Department, and contracts for this purpose will shortly be entered into.

By a recent contract 1,000,000 rounds of ammunition for the new small arm are being manufactured by the two principal cartridge works of the United States, an imported gun-cotton powder being used in these cartridges. An additional supply of this ammunition will be loaded with powder manufactured at the torpedo station.

It is earnestly recommended that an appropriation be made for the immediate purchase of powder, either in this country or abroad, as at present a supply is one of the greatest needs of the service. With a good supply on hand, all the future powder of the Navy can be readily obtained in this country, but it will be criminal neglect to allow any time to pass without having enough on hand to supply the ships for any emergency, however great.

TORPEDOES.

At the beginning of this Administration no ship had been fitted with torpedoes. All vessels now in service which were designed to carry torpedoes have been supplied and a supply is on hand sufficient for all vessels in process of construction.

The excellent practice which has been made with this destructive weapon from the vessels in commission indicates that officers and men have acquired great skill in handling it.

IMPROVED BUSINESS METHODS IN THE NAVY.

The general-storekeeper system was established in the Navy ten years ago. Prior to that time the eight bureaus acted independently of each other in the matter of purchases, and had different methods of purchasing, keeping accounts, caring for and issuing articles under their cognizance. This resulted in many differing systems of accounts, and also, as each bureau necessarily kept many articles in stock, in large and unnecessary accumulations of stores, bureaus often purchasing for their own use articles large stocks of which were at the time lying idle in the storehouses of other bureaus. Secretary Whitney concentrated the entire system of purchasing for the Navy under the Paymaster-General, and established the general-storekeeper system, whereby all articles on hand, no matter under what bureaus, were consolidated for

general use and placed under the control of the Bureau of Supplies and Accounts, which was held responsible for their purchase, care, and issuance. This order naturally encountered much resistance and may be expected to be more or less opposed as long as the bureau system obtains. Each chief is tempted to insist upon his right to purchase, upon the plea that he knows better than any other just what he needs. On this subject I said in my report for 1894:

"The system of placing the purchase and custody of supplies for the Navy under one bureau, which shall account therefor, was established by a general order of the Department in December, 1886, and it has since been developed by other orders and sanctioned by several acts of Congress. When it was established there were stores and material on hand amounting to some $16,000,000. Large quantities of certain stores, identically the same, were on hand, purchased by different bureaus, and of course each bureau had, wherever it had stores, its separate storehouse and its own storekeepers. The new system sought to make available wherever needed all supplies on hand fit for use. On the 30th of June, 1891, the amount of general storekeepers' supplies on hand had been reduced to $13,347,436.95. The value of such stores in stock June 30, 1894, was $9,658,583.49, showing a decrease during three years of $3,688,853.46.

"It should be stated that many of the stores spoken of were obsolete and worthless; some came over from the civil war and others were bought at a later date in anticipation of a war with Spain, while many were being carried at prices far above the market rates. Surveys were ordered to rid the Department of the accumulations of useless stores and to correct fictitious values. The deduction from these causes during the three years in question amounted to $1,781,865.69. Deducting this amount, we find that *old stores on hand when the present system of supplies and accounts was inaugurated in 1886 are still being utilized, and that there has been used of such stores during the last three years $1,906,987.77.* The amount so used during the fiscal year ending June 30, 1894, was $509,014.13.

"There is still a tendency on the part of some at least of the many sources of authority still existent in the Department to reassert their lost dominion over supplies and accounts, but it is not believed that any Secretary will ever find it advisable to yield to such demands."

After this was written I discovered that the bureaus other than Supplies and Accounts were still all keeping accounts of their own expenditures, resulting in much unnecessary work and a deal of duplication. This was at once stopped; but that the chiefs of bureaus might know the condition of appropriations under their cognizance, the Bureau of Supplies and Accounts was required to inform them weekly of the balbalances available under each appropriation and subhead of appropriation with which they are concerned. The Bureau of Supplies and Accounts was also required to keep accounts in such wise as to meet the specific reasons the other bureaus had urged as a justification for the unnecessary work they were doing.

Competition among bidders for supplies has increased, but it is not yet as great as it should be. This is due largely to the fact that the specifications for naval articles differ frequently, and, as it is believed,

often unnecessarily, from ordinary commercial standards for similar articles. It is undoubtedly true that commercial articles can not always meet the tests to which they must be submitted when required for use on a man-of-war, but it is also true that whenever it is entirely practicable naval standards should conform to commercial standards, thus enabling needed articles to be procured at less cost and more readily in emergencies.

A board of officers was therefore appointed, representing the different bureaus for which purchases are made, to examine specifications for all naval supplies and to report the best means of simplifying specifications and adopting commercial nomenclature and commercial standards, as far as may be without prejudice to the service. The board has not yet completed its work, but has made a number of recommendations. Some of these have already been approved, and the outcome will undoubtedly be wider competition, lower prices, equally as good and in some cases a better quality of article. It is also expected that the labors of this board will go very far toward ridding the Navy of middlemen and professional contractors by bringing purchasing agents in immediate touch with manufacturers and large business houses who have heretofore frequently declined to deal with the Government directly, because specifications so often consist of descriptions difficult to understand. Where ordinary commercial terms are practicable they will render dealings easy and profitable to both parties.

Under authority of Congress the Department established July 1, 1883, a naval supply fund, with the intent to enable the Department to keep in stock a supply of such ordinary commercial articles as are frequently called for, and particularly by vessels in commission. This obviates delays incidental to the preparation of requisitions, takes away excuse for purchases in the open market, and enables the Department, by purchasing in large quantities after competition, to secure lower prices and a better quality of material. During the last Congress the fund was increased from $200,000 to $500,000. The additional amount became available on the 1st of July last, and the Bureau of Supplies and Accounts has already purchased large quantities of supplies, many of which are of a kind not previously kept in stock.

The keeping of such stores on hand is a matter of very great advantage to the Navy; for instance, in the matter of deck planking. It would take from two to seven months to get such planking properly dried, and very frequently the securing of a small and even minor article, such as part of a machine, may greatly delay a ship and keep her at a yard when her services are much needed elsewhere.

YARDS AND DOCKS.

Since 1893 much work has been done at the Mare Island, Norfolk, and Brooklyn navy-yards in the way of dredging, extending quay walls, improving roadways, erecting and repairing buildings, etc. Quite

a deal of other work of similar character, however, remains to be provided for in the future. Some antiquated buildings, unfit for present purposes, still remain at these yards, and should be removed and new buildings substituted.

Improvements and betterments are also needed at other yards and stations. All such work as, in the opinion of the Department, should be provided for at the coming session of Congress is specified under the heads of the various yards and stations in the estimates which have been submitted for the consideration of Congress.

The Timber Dry Dock No. 3, at the New York yard, was contracted for in November, 1892, but has been delayed in construction by reason of the failure of the original contractor to properly prosecute the work, and in April, 1895, it became necessary to declare the contract forfeited, and to readvertise the work. May 8, a supplementary contract was concluded with T. & A. Walsh, of New York, and the work is now progressing satisfactorily. This dock should be completed by the latter part of December next. Its dimensions are: Length on floor, 615 feet 6 inches; width of entrance, 105 feet 3 inches at coping, 70 feet on floor; depth over sill at mean high water, 29 feet. It will accommodate the largest of our battle ships.

The timber dry dock at the Port Royal Station (S. C.) was contracted for with Justin McCarthy in April, 1890, and completed in October, 1895. The battle ship *Indiana* was docked there in March, 1896. The dimensions of this dock are: Length on floor, 448 feet 6 inches; width of entrance, 97 feet at coping, 66 feet on floor; depth over sill at mean high water, 25 feet 6 inches.

The timber dry dock at Port Orchard, Puget Sound station, was contracted for with Byron, Barlow & Co. in December, 1892, and completed in September, 1896. Though a timber dock, it has masonry abutments, the entrance being an inverted arch with the same curves as the greatest cross section of a battle ship. The stone abutment will be a very great, if not absolute, protection against the ravages of the "teredo." This is the largest dock on the Pacific Coast, its dimensions being: Length on floor, 608 feet 2 inches; width of entrance, 92 feet 8 inches at coping, 46 feet 1 inch on floor; depth over sill at mean high water, 30 feet.

At the navy-yard, Norfolk, a dry dock of sufficient size to take in the longest, widest, and deepest draft ships is very much needed. It is therefore recommended that a dock of the following dimensions be appropriated for at that place: Length on floor, clear, 650 feet; width of entrance, 100 feet; depth at mean low water, 30 feet.

This dock the Department recommends to be built of concrete, which possesses advantages over stone, first, in that the structure would be a monolith; second, more readily repaired; third, much cheaper. Its advantages over wood are durability and dryness. Estimated cost, $1,000,000.

Our experience shows that the timbers in wooden docks above the permanently wet level rot in a very few years, that all of the altars, which are alternately wet and dry, decay rapidly, and that the timbers at the entrance are particularly liable to destruction from the "teredo." The outer sill of the Simpson Dry Dock at Norfolk, Va., which was of creosoted oak, has been entirely destroyed by the "teredoes." This dock was opened September 17, 1889.

Attention is called to the channel leading to the Norfolk Navy-Yard. This channel is now only being dredged to a depth of 25 feet at low water, which is insufficient for ships that draw, as some of ours do, 27 feet when fully loaded. It is suggested that steps be taken to have a channel at least 300 feet in width dredged to a depth of 30 feet at low water.

In my last annual report the question of the advisability of building docks and opening extensive repair shops at places other than the navy-yards at Brooklyn, Norfolk, and Mare Island was discussed at some length, and attention is called to the reasons there given for the views held by the Department. To multiply plants for the repairs of vessels is multiplying machinery, increasing the number of quarter-men, leading-men, foremen, and officers engaged in superintending, scattering workingmen, and rendering more inefficient and expensive the force employed in keeping our vessels in repair. This, in the opinion of the Department, would be unwise and extravagant.

It is believed that the designation by Secretary Whitney of the navy-yard at Washington as the place where all ordnance work should be centered, of Mare Island, Norfolk, and Brooklyn as the places where should be centered the bulk of the building and repairing of ships, and of the Boston yard as the point where all equipment work should be done, was wise and businesslike, and the Department can not think that the time has come when this distribution of work should be departed from. These yards would seem to be sufficient for the bulk of such work as is likely to be needed by the Navy for many years to come upon the Atlantic and Pacific coasts. There should, however, be a navy-yard at some point on the Gulf where vessels cruising in Southern waters can be repaired.

Should the Caribbean Sea at any time be the theater of a naval war, the repairing of ships at points accessible to the Gulf of Mexico would be an absolute necessity.

MARINE CORPS.

In the summer of 1894 the Department had occasion to consider, as has been done many times before, the question of the value of marines on board our vessels of war, and the decision was again in favor of the marines. In 1895, as battle ships began to be commissioned, it was determined that marine guards, consisting of 60 men and 2 officers, should form a part of the crew of each. The reasons upon which this *conclusion was reached* were set forth with some fullness in my

annual report for 1895. Congress followed up this action by appropriating at its last session for 500 additional marines, and these have nearly all been enlisted. This corps is now in a high state of efficiency.

NAVAL ACADEMY.

The Department has been especially fortunate in the selection of a superintendent for the Naval Academy. Capt. P. H. Cooper was detailed to that duty on the 15th day of November, 1894.

When appointed, he was given to understand that he would be held personally responsible for the efficiency of the instruction to be given and especially for the discipline of the cadets; and further, that the Department would sustain him in every just and proper exercise of authority. Among other things, the superintendent was particularly enjoined to do whatever he might to put an end to the practice of hazing. For many years this practice prevailed at the Academy, and though every Secretary, every President, and every Congress, to whose attention it was brought, reprobated it as cowardly and unmanly, to induce cadets to view it in a proper light had proven an impossible task. The severest laws that Congress could devise had proven ineffectual. Special efforts were therefore made, both by the superintendent and myself, in the direction of appeals to the better judgment of cadets, and it is gratifying to be able to report that these young men seem to have taken the matter in hand, as has been recently done by students at other institutions of learning, and there have been no complaints of hazing at the Academy during the past two years.

The discipline of the cadets has never been better, and the efficiency of the school has never been greater than at present.

No Latin or Greek has ever been taught at the Academy, and it is not practicable to add them to the present curriculum. In the absence of any instruction in these branches, a knowledge of which is of so great importance to the understanding of our own tongue, it has been deemed proper to add to the course of English studies, and it is confidently believed that the results will prove beneficial.

Attention is called to the following recommendations of the superintendent:

That two moderate-sized, composite sailing vessels be built for practice ships for the Naval Academy, in order that the cadets may be properly instructed in seamanship.

That all candidates shall report for examination in May of each year and that there shall be only one examination for admission each year.

That candidates for admission to the Naval Academy shall, at the date of examination, be between 15 and 17 or 16 and 18 years of age.

That the present course be reduced from six years to four years.

Attention is also called to the following recommendations of the Chief of the Bureau of Navigation:

That Members of Congress shall be notified, as soon as Congress meets, of vacancies existing at the Naval Academy and that will occur prior to and including June 30 following.

That nominations by Members of Congress to fill said vacancies must be made prior to March 4 in each year.

That all candidates for admission to the Naval Academy shall report for examination by May 15 of each year, and that there shall be no other examination for admission during the year.

That candidates for admission to the Naval Academy must be between the ages of 14 and 16 years at date of examination and that the course of instruction shall be five years, all of which shall be at the Academy and in the practice ships.

Comparing these recommendations, it will be seen that these two officers, the Superintendent of the Academy and the Chief of the Bureau of Navigation, both concur in the idea that the present age limits of admission to the Academy, 15 to 20, should be changed. They both believe that the present law allows of too much difference in the ages of cadets, and that no applicant should be admitted over 18. Every Board of Visitors to the Naval Academy has concurred in somewhat similar recommendations. The statistics of that institution show that a larger percentage of younger boys than of older successfully complete the four years' course. This would seem to demonstrate that the age limit should be reduced and, when it is considered that all officers are retired by law at the same given age, it goes almost without the saying that there should not be as much as five years' difference in the ages of these officers when they begin their career.

I have heretofore urged legislation on this subject, and now repeat my recommendation.

PUBLICATION OF NAVAL WAR RECORDS.

Since my last annual report the second and third volumes of the Naval War Records have been issued and distributed, the fourth is in the hands of the printer, and two more volumes will be ready for the press during the present fiscal year.

The act of July 31, 1894, authorizing this publication, limited the distribution of the Congressional quota to members of the Fifty-third Congress and directed the sale by the Department of such unexpended quotas as might remain on hand at the time of the close of that Congress. The same Congress, however, before adjourning, extended the time of distribution until the date of the meeting of the Fifty-fourth Congress. The Fifty-fourth Congress, by a joint resolution approved January 30, 1896, directed that unexpended quotas of books should pass into the hands of the Members of that Congress, who were authorized to send in addresses for these books in like manner as in the original act. The effect of this joint resolution was to postpone the sale of these volumes by the Department until the close of the Fifty-fourth Congress, and in case the undistributed quotas shall be exhausted by that time there will remain no volumes for sale.

To permit the Department to make a more extended distribution of the work among officers of the Navy, the act approved May 28, 1896, authorized an extra edition of 1,000 copies of the publication. These

volumes are now being printed, and distribution will be made as soon as they are received from the Public Printer.

I have the honor to renew the recommendations in my last annual report in reference to the reorganization of this office, and to ask attention to the report of Lieut. Commander Richard Rush, U. S. N., superintendent Naval War Records. The proposed plan of reorganization was submitted to Congress last year, and passed the Senate, though it failed to become a law. The rapid progress made in the preparation and issuance of these publications, and the thoroughness with which the work is being executed, reflect credit on those engaged in it.

NAVY DEPARTMENT LIBRARY.

The naval library consists of about 30,000 volumes, about 2,600 of which have been added since March, 1893, and it contains probably the finest collection of professional and technical naval books in this country; nor are there many superior naval collections in Europe.

Special attention has been given to the department of marine and international law and naval courts-martial, in which line of literature the library is particularly rich. The volume containing the lectures on international law by Professor Snow, delivered at the Naval War College in the summer of 1894, is especially valuable. Copies of this work have been distributed to all the ships in commission.

The list of professional naval periodicals, foreign and domestic, is extensive, and is kept up to date with a view to supplying the intelligence office with official data.

The list of Congressional documents upon the shelves of the library is one of the most complete in the country. A valuable set of the Journals of the Continental Congress has recently been added to this collection.

A supplementary volume of the Author and Title Catalogue has been completed and printed for the years 1892–1895, which brings this catalogue up to the latter year.

A subject card catalogue has also been made within the last three years, so that the volumes of the library are catalogued by both author and subject, and since 1891 by title entry also, thus placing it under a very complete system of cataloguing.

JUDGE-ADVOCATE-GENERAL.

SCHEDULE OF PUNISHMENTS.

In consequence of the diversity in the constitution of courts-martial, the punishments imposed by such courts were found not infrequently to lack uniformity, and it was always necessary, in order to equalize as far as practicable the punishments awarded for like offenses, that the Department maintain a close supervision over the sentences imposed. This was, however, an indirect and unsatisfactory remedy for an evil

which it was thought might be dealt with more directly by legal enactment. The matter having been brought to the attention of Congress, a special act, approved February 27, 1895, was passed, which provided that the Articles for the Government of the Navy be amended by adding thereto the following:

ARTICLE 63. Whenever, by any of the articles for the government of the Navy of the United States, the punishment on conviction of an offense is left to the discretion of the court-martial, the punishment therefor shall not, in time of peace, be in excess of a limit which the President may prescribe. (28th Stat. L., 689.)

In pursuance of the provisions of this enactment, a schedule of punishments was prepared, approved by the President, and duly promulgated to the service in General Orders No. 459, dated May 25, 1896, establishing limitations to the punishments to be imposed upon officers and enlisted men by general courts-martial.

ADMINISTERING OATHS.

The special act approved January 25, 1895 (28 Stat. L., 639), provides as follows:

That judges-advocate of naval general courts-martial and courts of inquiry, and all commanders in chief of naval squadrons, commandants of navy-yards and stations, and officers commanding vessels of the Navy, and the adjutant and inspector, commanding officers and recruiting officers of the Marine Corps be, and the same are hereby, authorized to administer oaths for the purposes of the administration of naval justice and for other purposes of naval administration.

The enactment of this provision has proven a great convenience to the service, and has resulted in a material saving of expense in the matter of notaries' fees.

NAVAL OBSERVATORY LANDS.

Under authority conferred by a joint resolution approved August 1, 1894, the "right of way for the extension of Massachusetts avenue through the limits of the Observatory grounds" was granted by the Department. Further provisions of the same act authorizing the establishment of "an Observatory circle" could not be carried out, inasmuch as they contemplated the purchase of certain lands with the proceeds of the sale of others for which, after due advertisement, no proposals were received which in the opinion of the Department offered fair prices. The matter has accordingly been postponed until such time as there shall be an improvement in the real-estate market.

NAVAL PRISONS.

The subject of naval prisons has received the careful consideration of the Department, and no complaints respecting the condition of the prison at Boston or that at Mare Island have been received from any source during the year. The prison at Boston has been enlarged; the use of dark cells discontinued; courts have been advised to add a requirement respecting extra police duties to sentences involving

confinement, under which suitable exercise can be required; the food furnished has been carefully inspected, and it is believed that all practicable and proper provision has now been made for the health and comfort of the inmates of prisons, while at the same time new regulations have been promulgated for the purpose of strictly maintaining their character as penal institutions.

BIENNIAL EXAMINATION OF THE BONDS OF PAY OFFICERS.

The Attorney-General has decided, in response to a request from this Department, that United States district attorneys can not be called upon to make examination and certificate of the sufficiency of bonds of pay officers of the Navy. The law requires that the Secretary shall have such examinations made biennially. The Comptroller of the Treasury also decided, on the 29th September last, that while "it is the practice for a United States attorney to indorse upon a bond given to the United States that the sureties are, in his opinion, sufficient for the purpose thereof," yet that for such certificate given in his official capacity there is no law authorizing a charge against the United States.

In view of these decisions, it is recommended that Congress be requested to make it the duty of the United States attorneys, with or without other compensation than their salaries as shall seem wise, to make the necessary examination as to the sufficiency of sureties upon request of the Secretary of the Navy.

RETIREMENT OF OFFICERS AFTER THIRTY YEARS' SERVICE, AND OF ENLISTED MEN.

Petitions have been received by the Department from a number of officers asking for the amendment of section 1243 of the Revised Statutes so as to make its provisions applicable to the Navy. The section as it stands provides that an officer of the Army who has served forty consecutive years as such shall be retired from active service upon application to the President, and that after thirty years of service an officer may, upon his own application, in the discretion of the President, be so retired. It would seem no more than just that officers of the Navy should be placed upon the same footing as officers of the Army in this respect. Aside from this consideration, such a provision would doubtless do something towards facilitating the promotion of the younger men in the service and give them a chance to get into the higher grades, where their services are very much needed. If the amendment in question should be adopted, a corresponding change should be made in section 1588 of the Revised Statutes, which regulates the pay of officers upon the retired list of the Navy.

In the same petitions urgent request is made for the creation of a retired list for enlisted men of the Navy. The legislation proposed would confer on enlisted men of the Navy retirement rights now enjoyed by the Army and the Marine Corps, it being proposed that

after thirty years' service, with double allowance for service during the war, enlisted men serving as privates or noncommissioned officers shall, on application to the President, be placed on the retired list with the rank held at the date of retirement, and receive thereafter 75 per cent of the pay and allowances of the rank upon which they were retired. Legislation of this character has been heretofore recommended by the Department, and a bill embodying suitable provisions to carry out the purposes intended (H. R. 2271) was introduced at the first session of the Fifty-fourth Congress. The favorable report upon this measure submitted by Hon. Mr. Hilborn (House Report No. 1934, Fifty-fourth Congress, first session) embodies the views of the Department on the subject. It is observed that the committee proposed an amendment by inserting the words "provided he is fifty years of age." In view of the fact that many enlisted men enter the Navy as apprentices at ages varying between 14 and 18 years, it is considered that this amendment seems entirely proper.

BUREAU OF EQUIPMENT.

COAL SUPPLY.

The matter of coal supply is of great importance, and much attention has been given to it during the past three and a half years. Many tests of coal under service and other conditions have been made, and the prices paid for coal in various parts of the world have, with the results of these tests, been published in detail to enable commanding officers of ships to know where to find and how to select at fair prices the coal best suited for the boilers of their ships.

Tests have been made as follows:

Boiler tests at navy-yards	33
Chemical tests at navy-yards	56
Coal efficiency reports from ships in commission, under service conditions	482
Special tests:	
By the *Montgomery*	37
By the *Mohican*	30

By keeping commanding officers informed of the prices at which leading firms have offered coal at various ports, by chartering vessels and sending coal from the United States, and other means the average price of coal has been greatly reduced, as shown below:

1892–93:	
Average price per ton abroad	$8.85
Average price per ton at home	4.48
1895–96:	
Average price per ton abroad	6.85
Average price per ton at home	3.57

To obtain a fair idea of how these prices compare with those paid by vessels in the merchant marine, it must be remembered that the Navy usually purchases only the best.

COMPLETION OF TABLES FOR THE NAUTICAL ALMANAC.

During the past twenty years the Nautical Almanac Office has been carrying on a series of investigations intended to unify the data of astronomical science and to form the basis of new tables of the celestial motions for use during the next century. The work required a discussion and combination of the observations made at the leading observatories of the world from 1750 to the present time, thus securing the most exact determination possible of astronomical elements. It was completed and a summary published early in 1895. Tables of five out of eight of the principal planets based on the results have since been published, and tables of the remaining three are in process of construction.

In May last the "Bureau des Longitudes" of France invited the directors of the respective national ephemerides of the United States, England, and Germany, with four other official astronomers, to hold a conference in Paris in order to agree upon a common international system of astronomical data relating to the fundamental stars. This conference unanimously resolved to accept the work of the American Nautical Almanac Office, with some slight changes as an international standard for the purpose in question from and after the beginning of the next century.

The completion of the tables of the three remaining planets is now endangered by the prospective retirement of the director of the Nautical Almanac through the operation of law next March. The work in question belongs to a class which has always been recognized as of the highest practical and scientific value, and which, being of the most difficult and recondite kind, the nations of Europe have always taken pride in fostering. In view of the fact that the present work has already received the highest recognition which scientific authorities have to bestow, it is recommended that to the regular appropriation for the support of the Nautical Almanac be added a special appropriation of $3,000 to be immediately available for services of a competent mathematician to supervise the completion of the tables of the planets.

ADDITIONAL OUTFIT FOR THE NAVAL OBSERVATORY.

The large expenditures of the last ten years in the erection and fitting up of the new Naval Observatory render it expedient that nothing should be spared to enable it to do work of a corresponding character. The most important wants which still remain unsatisfied are a heliometer and an astronomical clock of the highest class. For the latter a vault must be provided in which the clock shall not be exposed to changes of temperature. Appropriations of the following amounts are recommended for these purposes:

For one heliometer	$11,000
For a standard astronomical clock and a vault to contain it	2,500

MISCELLANEOUS.

Our chain cables now made at Boston are believed to be the best in the world.

Ships are now fully supplied with improved life belts for every man aboard.

Ships' libraries have been completely reorganized. The number of books has been largely increased, and a crew's library is being placed aboard every ship, in addition to one for the officers, and these are now varied in character instead of being, as heretofore, the same in all ships. The officers' library is of a serious character throughout, while the crew's library has a large proportion of light literature. The Chief of the Bureau has devoted much study to the subject, and it is believed the system is as perfect, the books as well arranged, and the classification as complete as in the most thorough system ashore.

All messes are now supplied with their mess outfits of all kinds, and thus a ship can go into commission with the officers' and crew's mess outfits aboard and without the delays that formerly arose from the necessity of organizing officers' messes. The old system was the cause of and worked great injustice to officers in the matter of cost.

One of the greatest items in the cost of maintaining the Navy is the amount paid for coal, and no economy can be greater and more far reaching than that which will diminish the amount of fuel consumed by the ships. The Department makes every endeavor to have the ships cruise at the most economical rate of speed, so as to save fuel, and believes that as a result of such orders as are now contemplated there will be a still greater saving in this particular. It has been found that 55 per cent of the fuel is consumed by the auxiliary engines in furnishing electric lighting, ventilating, heating, cooking the distillation of water, and the sanitary flushing of the ship; and, in addition, the coal used in the steam launches attached to the ships. An investigation for a comparison between our own and foreign navies as to the question of electric lighting is being made, and enough information has already been gained to warrant the issuance of an order restricting the use of the electric lights to certain hours and requiring, under certain conditions, the use of candles and other modes of lighting which will save the expense of running the dynamos.

STEAM ENGINEERING.

The changes made in the designs of steam machinery during the past four years have been chiefly in the direction of securing greater durability. Previous designs seem to have left little to be desired, except that in some instances weights had been perhaps kept too low, this being due to an effort to keep down the displacement of ships. A material increase of weight has been allowed in much of the machinery recently designed and the result must be an improvement in durability.

Water-tube boilers have been studied and by direction of the

Department investigations of the workings of such boilers in certain ships were carefully made. The advantages pertaining to boilers of this class are appreciated and they have been adopted to a limited extent in some of the larger cruisers and gunboats and exclusively for torpedo boats, but it has not been deemed wise to use them in battle ships or even in the greater part of our gunboats or cruisers. This course seems now to have been wise, as in certain other navies where such boilers have been more largely used the question is being seriously debated whether their general adoption was not a mistake. The use we are at present making of different kinds of water-tube boilers will enable us to settle the question for ourselves.

LIQUID FUEL.

The Russians have a liquid fuel which they have for some time been successfully using in their torpedo boats and smaller craft. In our Navy the desirability of such a fuel is universally acknowledged. During the past year a number of experiments have been made with American oil on a small torpedo boat of the *Maine* and the results were so satisfactory that the Department now proposes to make further experiments with this system. It has therefore ordered that a tug now being constructed at the Norfolk yard and one of the smaller torpedo boats being built by the Herreshoff Company be fitted for using this oil, intending thus to thoroughly test its capabilities. These boats will be adapted for coal if oil fails.

NICKEL STEEL FOR BOILER PLATE.

When the cylindrical boilers for the *Chicago* were being designed, the Department sanctioned the use of nickel steel for the shell plates, but the plates received from the contractors were of such a character that grave doubts existed as to whether they could be used, on account of uneven surfaces. The manufacturers experienced such difficulty in getting satisfactory plates that the Department eventually decided to build but one of these boilers of this material, and to construct the others of the ordinary carbon steel. The physical tests of the nickel-steel plates were all that could be desired, and it is confidently anticipated that the makers will eventually overcome the difficulty that has been experienced in making smooth surfaces. When this is done, a material reduction in the thickness of boiler plates will be practicable.

The increase in the number of our ships, coupled with the vast increase in their horsepower and the machinery necessary to obtain such power, requires an increase in the number of engineers. It is therefore recommended that Congress allow the increase of this corps until the limit shall be 250 instead of 194 as at present. In making this increase the Department sees no necessity for calling upon the scientific schools of the country to furnish applicants for the positions to be created. Some years ago Congress provided that engineers as

wanted should be taken from cadet graduates of the Naval Academy, and provided for a special course to fit boys for this corps. It is believed that this was a wise policy, and that it should in no wise be departed from.

My knowledge of the relations between the different corps of the Navy convinces me that nothing should be omitted that will tend to unify and bring these corps together, and there can be nothing that will conduce more to this end than the coeducation at Annapolis of line and engineer officers. The beneficial effects of this system may be confidently expected to appear when time enough shall have elapsed to give it a thorough test.

MEDICINE AND SURGERY.

Since June, 1893, much valuable work has been done under the Bureau of Medicine and Surgery. The United States Naval Museum of Hygiene has been transferred from rented premises to the buildings formerly occupied by the observatory. The buildings have been renovated, exhibits systematically arranged, the library classified, and bacteriological and microscopical rooms fitted up.

A course of instruction has been established at the United States Naval Laboratory, New York, at which seventeen assistant surgeons have been under instruction, while several passed assistant surgeons have studied special branches.

Much work has been done in the way of improving the facilities for taking care of the sick and wounded at hospitals, such as the introduction of electric lights, elevators, small laboratories with chemical and bacteriological sets, modern ambulances, and the fitting up of aseptic operating rooms. Swinging cots have been furnished to the sick bays of ships, and a simple and practical method adopted for the handling of sick and wounded on shipboard.

The card system of correspondence has been adopted in this Bureau and business methods have been greatly improved.

SANITARY NECESSITY OF RECLAIMING THE FLATS OF THE EASTERN BRANCH OF THE POTOMAC RIVER.

During the year 1895 there were 913 cases of malarial diseases returned from the whole service. Of these, 213 cases, or nearly one-fourth, occurred in Washington, D. C., at the navy-yard and marine headquarters. At the Washington yard all the seamen and 80 per cent of the marines were attacked. The type of fever was severe, principally remittent and intermittent, running into the former type.

The fever prevailed chiefly during the summer and autumn, and reports received show that apprentices transferred elsewhere, after exposure at the yard during that time, suffered from attacks of the disease.

The intensity and prevalence of this trouble is indisputably due to the condition of the Anacostia River. In 1892 the channel on which the yard fronts was deepened and the mud thrown on the adjacent flats. The usual tidal currents were also interrupted by mud bars. This has resulted in a large increase of soil exposed at low tide to solar action in summer, decomposition doubtless proceeding even at high water in very hot weather. A board, appointed in May, 1895, to investigate in detail the sanitary condition of the yard, reported that "While the causes of disease originating within its limits (the yard) have been reduced to a minimum, it is, nevertheless, subject to morbific climatic influences incident to its topographic environment, especially to miasmatic emanations from the flats across the channel." The board also expressed the opinion that the liability to malarial poisoning of the residents in the yard will not be removed until the flats on the opposite shore have been wholly reclaimed.

It is undoubtedly true that the marked increase of malarial diseases at this yard is due to the mud flats on the Anacostia River, the immense amount of organic vegetable matter exposed generating malaria on a large scale.

In addition to this there have been large deposits on the flats of insoluble sewage, which has greatly added to ill health. James Creek, which empties into the Anacostia River, is a most insanitary sewer, its bottom, exposed at every low tide, being covered with decaying organic matter, both animal and vegetable.

It is safe to say that the future of the yard is endangered by its insanitary surroundings, and that not only the yard but also the adjacent section of the city demand that the flats of the Anacosta River be reclaimed without delay.

I most earnestly recommend this matter to the consideration of Congress. The importance of the naval gun plant at the Washington yard to the Navy can scarcely be overestimated, and if officers and employees are to remain there surrounding sanitary conditions should be improved.

CIVIL-SERVICE RULES GOVERNING LABOR AT NAVY-YARDS.

When your Administration began there was in operation a system of civil-service rules for the employment of labor at navy-yards which was working smoothly and had commended itself generally to the officials having these stations in charge. These rules had been devised by my predecessor, Secretary Tracy. They were carefully drawn, with a manifest intention that no personal preferences or partisan considerations should obtain in the employment of labor. The fact remained, however, that up to the moment of the adoption of these rules the old system, under which such preferences and co nsiderations always obtained had existed at all the yards.

When the new rules were adopted they necessarily covered and kept

in place present employees. No tests were, or indeed could well be applied to them. The result was that a large majority of the employees covered by the rules were members of the political party then in power. Foremen, it is true, were, upon the adoption of the rules in September, 1891, required to submit to examinations in competition with outsiders, but as proven capacity in the management of men, gained by experience in their places, necessarily counted for much in their examinations, most of these foremen retained their positions. The result, therefore, was that the new system began to operate with a very decided majority of foremen, quartermen, leading men, and other employees in place belonging to one political party.

These considerations were very earnestly and repeatedly pressed upon me in 1893 as reasons why I should disregard the rules, or at least abrogate them, until the representation of political parties in the yards should be equalized. It was contended too, with much show of truth, that laborers of the party to which I belonged, believing the rules to be but a sham, had failed to register for places. I did not fail to see the force of these arguments; but, on the other hand, it was to be considered that if such a system was ever to be in force, it must have a beginning, and that if the first Secretary coming in after the adoption of rules, against which the only objection was present inequality of political representation, should attempt equalization from his standpoint, every succeeding Secretary would have excuse for taking his bite at the cheese, and so the prospect would be that the whole system would be eventually nibbled away to nothing. It was therefore determined, with your full concurrence, that for the good of the Government the system should be adhered to, and this course has been pursued faithfully.

A very few foremen have been discharged, and they only for good cause, their places being filled by competitive examination. Experience has, of course, suggested some betterments. One of these was the adoption of a rule similar to that which has long obtained in the Civil Service Commission, that names should not remain on the lists subject to call for more than a year. This has, of course, in the time that has elapsed, removed whatever cause there might once have been for the complaint that the registration lists were blocked by applicants mostly from one political party. The one-year rule was obviously for the interests of good administration, as the calling in of laborers long on the rolls resulted in many delays because of the deaths, changes of residence, etc., of those to whom notices were sent.

The changes in the force during the past four years incident to discharges for cause, dropping for want of work, and taking on through the labor board, have gone very far toward equalizing the representation of political parties, and if the system shall in the future continue to be enforced with any degree of firmness, there can never be so loud a call on any Secretary for the abrogation or mutilation of these rules as that which assailed your Administration in 1893.

Other important betterments have been made, viz: Until recently, though persons with navy-yard experience were preferred over all others, except veterans, the rules made no distinctions among those whose records had been "satisfactory." The Department, therefore, ordered that whenever an employee was discharged his workmanship and conduct should be marked "excellent," "good," or "poor." "Excellent" gives preference next after veterans, who are always preferred applicants; "good" allows re-registration without preference; "poor" deprives of registration for one year. This rule incites to diligence and it secures to the Government the best laborers. Employees whose workmanship and conduct were marked "excellent" are also given the additional privilege of being furloughed for limited periods instead of being discharged when, by reason of want of work at any navy-yard, it becomes necessary to reduce the force. These changes, insuring steady employment to the best laborers, are producing admirable results.

If there be any point at which the Government of the United States is entitled to the very best service that can be had, where men should get work because they are capable of doing it, and should retain employment only because they discharge their duties faithfully, it is in the navy-yards, where ships are built and repaired that are to go forth on the high seas freighted with precious lives and carrying the flag that symbolizes the might and majesty of our country. There can be no comparison between a navy-yard system that holds out every inducement to good conduct and excellence in workmanship and another in which a controlling consideration in the procurement of work and the retention of place is political influence. Every naval officer whose duties have brought him during the past six years in contact with the laborers at our Government yards will, I am sure, testify to the immeasurable superiority of the present over the old system. To the maintenance and betterment of this system, I have devoted much of my time and thought during these four years, in the earnest hope that the labors of Secretary Tracy in this behalf, supplemented by my own, will result in ingrafting it permanently in the service of the naval establishment.

On May 6, 1896, the President extended the civil-service rules to cover all employees at navy-yards, whose duties are in whole or in part of a clerical nature, or who are serving in the capacity of watchmen or messengers, and appointments to such positions in navy-yards can now only be made after examination and certification by the Civil Service Commission.

On the 29th of July last the Civil Service Commission adopted the following resolution:

Whereas the enforcement by the Secretary of the Navy of regulations governing the employment of labor at navy-yards having been shown to be highly useful, and it being important that they should be given stability independent of changes of Administration, and it *appearing that the* examinations and other tests of fitness

provided by these regulations are based on the principles that personal fitness should prevail over recommendation, and that political influence should be disregarded, it is

Ordered, That these regulations be, and they are hereby, adopted as the regulations of this Commission under the authority conferred by clause 1 of rule 1. (Minutes of July 29, 1896, clause 4.)

And the following Executive order was promulgated November 2, 1896:

The regulations of the Navy Department governing the employment of labor at navy-yards having been adopted by the Civil Service Commission as a regulation of the Commission, July 29, 1896, under the authority conferred by clause 1, rule 1, of the Revised Civil Service Rules of May 6, 1896, it is hereby ordered that no modification of the existing regulations shall be made without the approval of the Civil Service Commission.

GROVER CLEVELAND.

EXECUTIVE MANSION, *November 2, 1896.*

OFFICE OF NAVAL INTELLIGENCE.

The following publications have been prepared in the Office of Naval Intelligence since March 4, 1893, viz: General information series Nos. XII, XIII, XIV, XV, and part 1 of No. XVI; extensive corrections to Coaling, Docking, and Repairing Facilities of the Ports of the World; Memoranda of Information on Ports for the following stations: North Atlantic, South Atlantic, Pacific, Asiatic; Corrections to Guns, France and Spain; Terms used in Fortifications.

In addition to the ordinary work of classifying, carding, and compiling information from abroad, the office posted daily the reports and accounts of the Brazilian revolt and of the China-Japanese war, so as to have as thorough a knowledge as possible of the situations as a whole, and of all details concerning those naval operations. The Department was kept thoroughly informed of everything from abroad likely to affect the construction or equipment of our new battle ships, cruisers, or torpedo boats, building or about to be built, and various compilations on these subjects were furnished to the Secretary and to the several boards formed under his directions. Much information on various naval subjects was compiled under authority of the Department for Senators and Members of the House of Representatives. By direction of the Secretary, the various schemes proposed in Congressional bills and otherwise for relieving the existing stagnation of promotion in the Navy were tested in this office, and the results which they would accomplish if put in force reported.

The records of the office with their cards are now being overhauled thoroughly, and all obsolete matter removed from the live files. The office scheme of classification has been revised to better meet the conditions arising from the necessary decrease in the commissioned officer staff. The clerical force of this office has recently been increased, because the exigencies of the service compelled a reduction in the number of officers employed.

The Intelligence Office is in a highly efficient condition. It has been most carefully and ably managed by the present officer in charge and his predecessors, and is believed to be equal if not superior to any similar office abroad. It would be very hard to exaggerate its importance. At the very first sign of possible conflict the information gathered there would be promptly studied. A close union should be maintained between it and the War College, both working to the end of meeting all possible naval problems that may arise from any international difficulty, keeping all the time abreast with the actual facts and existing conditions of naval warfare.

Under this office and reporting to it are three naval attachés accredited to various countries in Europe, each being attached to one or more of our legations or embassies. From these sources the office is in constant receipt of valuable information, both of a scientific and naval character, and is kept fully posted as to the movements of the naval world abroad, its improvements, its economies, and its progress.

TRAINING STATIONS.

Rear-Admiral F. M. Bunce, then commodore, left the training station at Newport two years ago, to be succeeded by Commander F. W. Dickins, who has kept that branch of the service fully up to the high standard of efficiency in which he found it.

Frequent personal inspections of the work done in the training of apprentices at Newport, R. I., enables the Department to commend in the highest manner the efficiency of the system that is being pursued. The results of the system in operation there are very gratifying, but it is much to be regretted that a larger proportion of the boys can not be kept in the service after the expiration of their apprenticeship. The Department has been endeavoring to procure the more frequent reenlistment of these young men at the termination of their apprenticeship by offering them inducements to remain in the Navy. Its efforts have been crowned with a measure of success, but it is believed that more can be accomplished by continued effort in that direction.

TRAINING STATION ON PACIFIC COAST.

At the last session of Congress an act was passed providing for the establishment of a training station on the island of Yerba Buena, near San Francisco, and that a board of two officers of the Navy and one officer of the Army should select and assign so much of said island as might be necessary for this purpose, and that the site so selected should be transferred to the Navy Department.

This board has been appointed, but has not yet had time to report. In the meantime apprentices are temporarily being enlisted at Mare Island and trained on board the *Independence*. The *Pensacola* is being prepared to receive apprentices until such time as buildings can be

erected upon the island of Yerba Buena, and the *Adams*, now en route to San Francisco from Honolulu, will upon her arrival be immediately fitted for duty as a seagoing naval training ship for the Western coast.

TORPEDO STATION.

The torpedo station is engaged in the work of testing and giving instructions to officers in the use of torpedoes, devising appliances for fitting and installing torpedoes on board ships, and experimenting with and manufacturing smokeless powder, gun cotton, and other high explosives.

This station has, during the last four years, been under the charge of Commander Converse, whose remarkable knowledge of his specialties and business capacity has enabled him to render invaluable services to the Department.

PAVING OF STREET ON EAST SIDE OF BUILDING.

The Department has heretofore called the attention of Congress to the fact that the street on the east side of the State, War, and Navy Department building is unpaved, and that in dry weather the dust arising from it settles on and very much injures the appearance of that side of the building and at the same time comes into the offices of the Department, is an injury to the files, and an annoyance to the clerks and others while in the discharge of their duties.

The attention of the Commissioners of the District was called to this matter about eighteen months since, and they were requested to pave the street, but it appeared that this street was not under their charge, and that no part of the general appropriation for improving and keeping in repair the streets of the city could be used for this purpose. Congress was accordingly requested to make a direct appropriation for that purpose, and this recommendation is hereby repeated.

SALE OF CONDEMNED VESSELS.

Since the date of my last annual report, the U. S. S. *Swatara*, at the Mare Island Navy-Yard, which was condemned as unfit for further service and stricken from the Navy Register, in pursuance of section 2 of the act of August 5, 1882 (22 Stat. L., 296), has been appraised and sold at public sale, in accordance with section 5 of the act of March 3, 1883 (22 Stat. L., 599). The following proposals for the purchase of this vessel were received under the Department's advertisement of August 3, 1896, viz:

The Johnson Wrecking Company, San Francisco, Cal	$6,900
Charles Boudron, San Francisco, Cal	5,780
F. P. Johnson, San Francisco, Cal	2,600
H. P. Gray, San Francisco, Cal	2,550

The expense of advertising the sale of the *Swatara* was $75.86, and the balance of the proceeds arising from the sale has been covered into

the Treasury, in accordance with section 3618 of the Revised Statutes, as "Miscellaneous receipts on account of proceeds of public property."

MISCELLANEOUS RECEIPTS.

A detailed statement, prepared in the Office of the Auditor for the Navy Department, will be found in the Appendix, showing deposits in the Treasury from November 1, 1895, to November 1, 1896, arising from the sale of condemned stores, materials, nautical books and charts, fuel, clothing; from rents of Government property; from supplies furnished to other branches of the Government, and from other lawful disposition of public property under the cognizance of the Navy Department.

The total amount so deposited was $85,399.36, of which sum $14,868.11 was covered into the Treasury as "Miscellaneous receipts on account of proceeds of public property," as required by section 3618 of the Revised Statutes, and the remainder, $70,531.25, carried as authorized by law to the credit of the proper appropriations to be applied to naval purposes.

Appropriations, expenditures, and balances for the fiscal year ending June 30, 1896, and balances October 31, 1896.

Title of appropriation.	Appropriations for fiscal year 1896, exclusive of public works.	Amount drawn in fiscal year 1896.	Balances June 30, 1896.	Balances Oct. 31, 1896.
General establishment:				
Pay of the Navy	$7,649,329.60	$6,552,753.45	$1,096,575.55	$542,082.13
Pay, miscellaneous	290,226.20	260,914.73	29,311.47	4,855.31
Contingent, Navy	7,000.00	4,164.74	2,835.26	838.06
Bureau of Yards and Docks:				
Maintenance	250,000.00	231,579.67	18,420.33	1,617.19
Repairs and preservation, navy-yards	400,000.00	349,604.03	50,395.97	25,863.51
Civil establishment	61,597.37	57,245.70	4,351.67	4,713.37
Contingent	15,000.00	14,549.05	450.95	117.21
Naval Home, Philadelphia, Pa	79,315.00	59,987.11	19,327.89	4,005.04
Bureau of Equipment:				
Equipment of vessels	1,278,000.00	1,042,568.34	235,431.66	60,040.67
Civil establishment	19,625.00	18,425.01	1,199.99	1,199.99
Contingent	12,000.00	10,657.88	1,342.12	1.68
Naval Observatory	12,000.00	11,422.57	577.43	1.55
Bureau of Navigation:				
Pay, Naval Academy	106,247.77	105,946.83	300.94	362.58
Repairs, Naval Academy	31,000.00	27,058.08	3,941.92	2,353.65
Heating and lighting, Naval Academy	20,000.00	17,356.57	2,643.43	3.38
Special course, Naval Academy	3,000.00	2,761.60	238.40	238.40
Contingent, Naval Academy	41,300.00	33,570.63	7,729.37	1,495.12
Naval War College and Torpedo School	10,000.00	7,661.70	2,338.30	98.28
Naval Training Station	30,000.00	27,426.15	2,573.85	12.38
Gunnery exercises	6,000.00	4,671.14	1,328.86	.....
Transportation, recruiting, and contingent	45,000.00	43,476.31	1,523.69	250.02
Ocean and lake surveys	14,000.00	12,577.07	1,422.93	1,219.31
Outfits for naval apprentices	25,000.00	15,362.05	9,637.95	3,736.05
Naval Station, *Newport, R. I.*	*1,000.00*	689.97	310.03	.84

Appropriations, expenditures, and balances for the fiscal year ending June 30, 1896, and balances October 31, 1896—Continued.

Title of appropriation.	Appropriations for fiscal year 1896, exclusive of public works.	Amount drawn in fiscal year 1896.	Balances June 30, 1896.	Balances Oct. 31, 1896.
Bureau of Ordnance:				
Ordnance and ordnance stores	$300,000.00	$280,422.99	$19,577.01	$5,738.79
Repairs	30,000.00	28,676.59	1,323.41	482.68
Civil establishment	26,824.00	25,340.65	1,483.35	1,483.35
Contingent	8,000.00	4,405.50	3,594.50	1,322.35
Torpedo station	60,000.00	55,010.94	4,989.06	1,190.83
Patent rights breech-loading ordnance	25,000.00	.....	25,000.00	25,000.00
Bureau of Construction and Repair:				
Construction and repair	900,000.00	884,750.66	15,249.34	76.24
Civil establishment	19,972.50	18,956.26	1,016.24	1,059.38
Bureau of Steam Engineering:				
Steam machinery	675,000.00	634,164.26	40,835.74	1.24
Civil establishment	11,900.00	11,900.00	.....	67.48
Contingent	1,000.00	855.32	144.68	32.00
Bureau of Supplies and Accounts:				
Provisions	1,175,000.00	1,032,181.79	142,818.21	10,116.03
Civil establishment	67,581.09	62,998.24	4,582.85	4,653.49
Contingent	45,000.00	35,491.64	9,508.36	3,116.41
Bureau of Medicine and Surgery:				
Medical Department	60,021.00	59,786.79	234.21	206.14
Repair	20,000.00	19,084.79	915.21	897.31
Contingent	25,000.00	21,935.81	3,064.19	8.23
Naval hospital fund	20,000.00	20,000.00	.....	.....
Ambulance for naval hospitals	1,800.00	1,800.00	.....	.....
Marine Corps:				
Pay	695,645.65	665,425.49	30,220.16	11,667.87
Clothing	80,000.00	74,071.74	5,928.26	1,629.99
Provisions	90,000.00	74,912.45	15,087.55	4,277.16
Fuel	19,500.00	11,856.73	7,643.27	6,300.69
Repair of barracks	12,000.00	11,207.78	792.22	75.28
Military stores	13,297.00	11,250.37	2,046.63	1,296.24
Transportation and recruiting	15,000.00	6,007.02	8,992.98	4,850.27
Forage	2,800.00	2,653.59	146.41	6.41
Hire of quarters	6,624.00	5,322.40	1,301.60	780.00
Contingent	30,000.00	29,725.23	274.77	16.24
Total	14,843,605.58	13,002,625.41	1,840,980.17	741,457.82

As will be seen from the foregoing exhibit—

The appropriation for current expenses for the fiscal year ending June 30, 1896, exclusive of public works, amounted to	$14,843,605.58
Drawn by requisitions to June 30, 1896	13,002,625.41
Balance July 1, 1896	1,840,980.17
Drawn by requisitions from July 1, 1896, to October 31, 1896	1,099,522.35
Balance November 1, 1896	741,457.82
Add balances in the hands of disbursing officers at same date	3,336.40
Available balance November 1, 1896	744,794.22

ESTIMATES AND APPROPRIATIONS.

Comparative exhibit of estimates and appropriations, 1897 and 1898.

Detailed objects of expenditure and appropriation.	Estimates, 1897.	Appropriations, 1897, current year.	Estimates, 1898.
General establishment:			
Pay of the Navy	$7,850,873.00	$8,100,873.00	$8,235,385.00
Pay, miscellaneous	260,000.00	260,000.00	300,000.00
Contingent Navy	7,000.00	7,000.00	7,000.00
Bureau of Yards and Docks:			
Ordinary expenses	821,379.04	741,486.04	862,400.44
Public works	1,295,190.78	773,080.78	1,373,662.57
Bureau of Navigation:			
Ordinary expenses	289,750.00	143,450.00	159,450.00
Naval Academy	231,031.45	274,801.45	200,201.45
Bureau of Equipment:			
Ordinary expenses	1,343,772.00	1,843,772.00	1,485,642.00
Naval Observatory	14,300.00	14,300.00	5,000.00
Bureau of Ordnance	1,767,190.00	1,499,324.00	1,443,824.00
Bureau of Construction and Repair	2,040,472.50	1,985,472.50	1,832,472.50
Bureau of Steam Engineering	1,209,400.00	1,134,400.00	1,172,105.00
Bureau of Supplies and Accounts	1,447,532.03	1,522,532.03	1,525,432.03
Bureau of Medicine and Surgery	137,200.00	137,200.00	137,200.00
Marine Corps:			
Pay department	690,471.40	764,296.40	763,030.20
Quartermaster's department	267,221.00	331,618.75	334,348.00
Total running expenses	19,672,783.20	19,033,606.95	19,837,153.19
Increase of the Navy:			
Bureau of Equipment	287,500.00	237,000.00	232,628.00
Bureau of Ordnance	3,955,204.00	4,421,454.00	7,720,796.00
Construction and machinery	5,395,679.00	6,870,600.00	6,425,359.00
Total increase of the Navy	9,638,383.00	11,529,054.00	14,378,783.00
Grand total	29,311,166.20	30,562,660.95	34,215,936.19

THE WAR COLLEGE.

The Department during the last three years has given every possible aid and encouragement to the War College, and the results have been most gratifying. During this period lectures on naval topics by officers of the different corps of the Navy were delivered as theretofore. Lectures on subjects cognate to naval affairs were also given by a number of eminent gentlemen outside of naval circles, and among these lectures were quite a number on international law. Professor Snow, of Harvard University, in the summer of 1894, delivered a course of lectures on international law, intended especially for the use of naval officers. These were published in book form, and copies have been distributed to all cruising vessels.

Lectures stimulate professional pride, excite intellectual activity, and impart much useful information, and they must always form an integral part of the exercises at the college; but other work has now been entered upon which will be of far greater practical value.

Capt. H. C. Taylor succeeded Captain Mahan in charge of the college in 1893. He is an enthusiast in his profession, has the capacity of infusing enthusiasm into others, and upon taking charge he fully realized the opportunities for usefulness that were before him.

As Captain Mahan in his works on Sea Power clearly pointed out, the underlying and general principles of naval warfare must always remain the same, whatever be the material of which ships are composed, their propelling power, their means of offense or of defense; but it is also true that with modern navies the art of war is capable of advances which would have been manifestly impossible under former conditions. Now, when men-of-war can go straight to an objective point with little regard for wind or weather, and when swift ships can cover the distance across the Atlantic in a week, there can be no more playing at hide and seek for months, as the French and English fleets under Villeneuve and Nelson did in the early part of this century. Neither will the weather-gauge, except by an accident that no science can foresee, ever play in the future after fleets have sighted each other the important part it always did in the naval operations of days gone by. Ships under steam can maneuver with little regard to wind or tide. Calculations can therefore now be made as to the time within which squadrons can be assembled at a given point with as much accuracy as a general can decide when he can occupy a position with an army, and the tactical maneuvers of a fleet can be made as readily and with as much certainty as the evolutions of battalions.

The German military staff, with Von Moltke at its head, when preparing for the Franco-German conflict, advanced the art of war to almost the exactness of a science. With a full knowledge before them of the post roads, railroads, strategic points, and military resources of their own and the enemy's countries, this staff mapped out beforehand the campaign which resulted within fifty days from the first hostile movement in the capture of the French Emperor and his principal army at Sedan, and finally in the complete overthrow of France.

In this age of steam similar studies of possible and probable naval campaigns are entirely practicable. We have never had any experience of our own with fleets engaged against other fleets in battle. In the war of 1812 we had no fleet with which to fight the enemy's fleets; our isolated ships were engaged in raiding the enemy's commerce, and now and then, when opportunity offered, in fighting duels with other single ships; in the civil war the enemy had no fleets with which to engage the fleets of the Union. The services the Navy rendered in that war, invaluable though they were, consisted mainly in blockading, in attacking fortified positions, in aiding military operations, in taking possession of rivers, severing the enemy's communications, etc. There has therefore been nothing in our own naval history to turn the minds of naval officers in the direction taken by the studies which have occupied the War College during the last three years.

These studies, pursued with the aid of tactical games and of given strategical problems, have excited a fresh and lively interest, not only in the minds of officers present at the college but throughout the entire Navy. I can not better set forth in any short space the purposes of the college and the work it has been engaged in than by quoting the following extract, taken from a lecture delivered by myself before the class there in August last:

"The opinion was once widely entertained that this college was intended for a postgraduate course, and that, this being so, it should be located, if allowed to exist at all, at the Naval Academy. I was of this opinion myself, until three years ago on a personal visit I inspected its workings and examined fully into its plans and purposes. Then I discovered what the public is beginning to understand, and what the Navy itself is now coming fully to appreciate, that it is in no sense a postgraduate course that is being pursued within these walls; that not only are the theory and art of war being thoroughly studied and developed here, but knowledge is being acquired and practical information is being amassed, without which the Navy Department can not possibly, in the event of war, utilize the naval resources of our country.

"Ships and guns and torpedoes and men are all of little use unless officers know how to fight them. Individual ships, however bravely and skillfully they may be handled and fought, can accomplish but little if officers do not know when, where, and how to dispose them, while at the same time skill in handling, courage in fighting, and knowledge of the proper disposition of ships in battle will often all be of little avail without continual and prompt supplies of everything needed in the exigencies of war, all of which must be reckoned for beforehand.

"Successful war means all of these things and more besides. It means, if the exigency requires, the exertion by a nation of its utmost power, the utilization of all its resources, the tapping of every source of supply, the employment of every manufactory, every ship, and every man that can be useful, and all this with the utmost promptitude and dispatch. Further than this, plans of attack and defense must be devised, and these can not be successfully made without the most accurate knowledge of harbors, inlets, safe and unsafe passages, tides, and everything else pertaining to the possible theaters of impending war. A study of these and of still other problems constitute the work which, I am glad to say from a careful personal inspection of results, you have been successfully performing during the years just passed."

INCREASE OF THE NAVY.

When the Department undertook in 1892 the task of laying down battle ships, the drafts of the *Indiana* and *Columbia* classes having been brought to its attention, the Bureau of Construction was directed to prepare plans for the new vessels that should give them 2 feet less draft. It was urged that there were difficulties in the way, but the order was insisted upon and was carried out. The battle ships laid down during this Administration are, therefore, of lighter draft than those previously designed proved to be when completed, being 23 feet at normal and 25 feet at extreme draft. This step, which was in the right direction, it now appears did not go far enough, or perhaps it would be

fairer to say that the battle ships heretofore laid down, while adapted to the defense of the Atlantic and Pacific coasts, are not as well suited for operations in the Gulf of Mexico. Attention is called to the following recommendation from the president of the War College:

> The close study of the Gulf of Mexico which has been carried on by the Department's order during the last year shows it to be essential to the success of defensive naval campaigns that we shall be able to use for our fighting ships those harbors which nature has provided. Although possessing bases for fleets in that region, the fact that there is not enough depth of water for our fighting ships to enter them will render them of but slight benefit to us.
>
> It is submitted further that the artificial deepening of channels and entrances is not a good solution of this difficulty, because such dredged channels are of necessity narrow, easily blocked, and very sensitive to injuries from an enemy or the elements.
>
> The effort to remedy a shoal entrance by dredging a narrow channel across the bar seems unwise as far as naval and military questions are concerned, and the true remedy, in the opinion of the War College, lies in decreasing the draft of the war ships to a point permitting them to enter.
>
> The college therefore respectfully suggests that future ships of war be planned for an extreme deep-load draft, with maximum coal supply on board, of 23 feet, and submits that considerations of strategy upon our Atlantic and Gulf coasts render this an essential to successful naval campaigns.

This reasoning is the final result of much careful study by able officers of conditions as they exist on our Southern coast. Battle ships that could enter the harbors of Savannah, New Brunswick, Key West, Tampa, Pensacola, Mobile, and the mouth of the Mississippi at all times would have an immense advantage over the battle ships of foreign nations, few if any of which could enter these ports. Light-draft battle ships, if we had them, could make any of these ports bases of supply, could sally forth from them or retire into them at will, and could therefore almost always offer battle on their own terms.

There are also many of our ports farther north which would give the same advantages to such ships.

I therefore recommend the authorization at the coming session of Congress of three such battle ships.

The tables of the comparative strength of the navies of the world heretofore quoted clearly show that we are still quite deficient in torpedo boats. Very many of the naval powers of the world, which are in other respects much weaker than we, have two or three times as many torpedo boats. I respectfully recommend the authorization of 12 torpedo boats at the coming session of Congress.

In sending in this my last annual report, I can not permit the occasion to pass without expressing my warm gratitude to Assistant Secretary McAdoo for the ability, fidelity, and promptness with which he has discharged the duties of his position. The Naval Militia, the Marine Corps, the repairs to ships, and other important matters have been, by general order, especially under his charge. Not only has he performed the duties pertaining to these branches of the service, but he has afforded me much valuable aid and advice in other matters, and

whenever the duty of managing the Navy Department devolved upon him, he has discharged it in the most satisfactory manner.

When the Secretary and Assistant Secretary have both been absent, Rear Admiral F. M. Ramsay, the efficient Chief of the Bureau of Navigation, acted as Secretary to the entire satisfaction of the Department.

I am also deeply indebted to the chiefs of bureaus and to the Judge-Advocate-General of the Navy for the invaluable services they have rendered to the Department since my incumbency of this office. No head of a Department could ask for abler or more faithful and willing cooperation than I have received at their hands.

HILARY A. HERBERT,
Secretary of the Navy.

SECRETARY'S OFFICE—ESTIMATES, PROPOSALS, AND CONTRACTS.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES, OFFICE OF SECRETARY OF THE NAVY.			
Secretary (act May 28, 1896)	$5,000		
Assistant Secretary (same act)	4,500		
Chief clerk (same act)	2,500		
Clerk to Secretary (same act)	2,250		
Clerk in charge of civil employments and labor regulations at navy-yards, and appointment clerk (same act)	2,250		
Disbursing clerk (same act)	2,250		
One clerk of class 4, in charge of files and records (same act)	1,800		
One clerk of class 4 (same act)	1,800		
Two clerks of class 3 (same act)	3,200		
One stenographer (same act)	1,400		
One clerk of class 2 (same act)	1,400		
Five clerks of class 1 (same act)	6,000		
One clerk (same act)	1,000		
One telegraph operator (same act)	1,000		
One carpenter (same act)	900		
Two messengers, at $840 each (same act)	1,680		
Four assistant messengers, at $720 each (same act)	2,880		
Three laborers, at $660 each (same act)	1,980		
One messenger boy (same act)	420		
One messenger boy (same act)	360		
		$47,570	$51,010
CONTINGENT EXPENSES, NAVY DEPARTMENT.			
Stationery, furniture, newspapers, plans, drawings, drawing materials, horses, carriages, freight, expressage, postage, and other absolutely necessary expenses of the Navy Department and its various bureaus and offices (act May 28, 1896)		11,000	11,000
PRINTING AND BINDING.			
Printing and binding for the Navy Department, including $12,000 for the Hydrographic Office, to be executed under the direction of the Public Printer (act June 11, 1896)		90,000	70,000
SALARIES, OFFICE OF JUDGE-ADVOCATE-GENERAL.			
Chief clerk, in lieu of one clerk of class 4 (act June 3, 1881, R. S., 21, pp. 27, 164, secs. 167, 1; act May 28, 1896, P. E. L., p. 165, sec. 2)	1,800		
One clerk of class 4 (same acts)	1,800		
One clerk of class 3 (same acts)	1,600		
One clerk of class 2 (same acts)	1,400		
One clerk of class 1 (same acts)	1,200		
One clerk (same acts)	1,000		
One clerk (same acts)	900		
One laborer (same acts)	660		
		10,360	10,460

NOTE.—One of the clerks of class 4 now provided for has been actually performing the duties of chief clerk for some time past. His designation as such will promote the efficient organization of the office without involving any increase in his compensation or any change whatever in the amounts appropriated.

SECRETARY'S OFFICE—ESTIMATES, PROPOSALS, AND CONTRACTS.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES, OFFICE OF SECRETARY OF THE NAVY.			
Secretary (act May 28, 1896)	$8,000		
Assistant Secretary (same act)	4,500		
Chief clerk (same act)	2,500		
Clerk to Secretary (same act)	2,250		
Clerk in charge of civil employments and labor regulations at navy-yards, and appointment clerk (same act)	2,250		
Disbursing clerk (same act)	2,250		
One clerk of class 4, in charge of files and records (same act)	1,800		
One clerk of class 4 (same act)	1,800		
Two clerks of class 3 (same act)	3,200		
One stenographer (same act)	1,400		
One clerk of class 2 (same act)	1,400		
Five clerks of class 1 (same act)	6,000		
One clerk (same act)	1,000		
One telegraph operator (same act)	1,000		
One carpenter (same act)	900		
Two messengers, at $840 each (same act)	1,680		
Four assistant messengers, at $720 each (same act)	2,880		
Three laborers, at $660 each (same act)	1,980		
One messenger boy (same act)	420		
One messenger boy (same act)	360		
		$47,570	$51,010
CONTINGENT EXPENSES, NAVY DEPARTMENT.			
Stationery, furniture, newspapers, plans, drawings, drawing materials, horses, carriages, freight, expressage, postage, and other absolutely necessary expenses of the Navy Department and its various bureaus and offices (act May 28, 1896)		11,000	11,000
PRINTING AND BINDING.			
Printing and binding for the Navy Department, including $12,000 for the Hydrographic Office, to be executed under the direction of the Public Printer (act June 11, 1896)		90,000	70,000
SALARIES, OFFICE OF JUDGE-ADVOCATE-GENERAL.			
Chief clerk, in lieu of one clerk of class 4 (act June 8, 1881, R. S., 21, pp. 27, 164, secs. 167, 1; act May 28, 1896, P. E. L., p. 165, sec. 2)	1,800		
One clerk of class 4 (same acts)	1,800		
One clerk of class 3 (same acts)	1,600		
One clerk of class 2 (same acts)	1,400		
One clerk of class 1 (same acts)	1,200		
One clerk (same acts)	1,000		
One clerk (same acts)	900		
One laborer (same acts)	660		
		10,360	10,460

NOTE.—One of the clerks of class 4 now provided for has been actually performing the duties of chief clerk for some time past. His designation as such will promote the efficient organization of the office without involving any increase in his compensation or any change whatever in the amounts appropriated.

SECRETARY'S OFFICE—ESTIMATES, PROPOSALS, AND CONTRACTS.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES, OFFICE OF SECRETARY OF THE NAVY.			
Secretary (act May 28, 1896)	$5,000		
Assistant Secretary (same act)	4,500		
Chief clerk (same act)	2,500		
Clerk to Secretary (same act)	2,250		
Clerk in charge of civil employments and labor regulations at navy-yards, and appointment clerk (same act)	2,250		
Disbursing clerk (same act)	2,250		
One clerk of class 4, in charge of files and records (same act)	1,800		
One clerk of class 4 (same act)	1,800		
Two clerks of class 3 (same act)	3,200		
One stenographer (same act)	1,400		
One clerk of class 2 (same act)	1,400		
Five clerks of class 1 (same act)	6,000		
One clerk (same act)	1,000		
One telegraph operator (same act)	1,000		
One carpenter (same act)	900		
Two messengers, at $840 each (same act)	1,680		
Four assistant messengers, at $720 each (same act)	2,880		
Three laborers, at $660 each (same act)	1,980		
One messenger boy (same act)	420		
One messenger boy (same act)	360		
		$47,570	$51,010
CONTINGENT EXPENSES, NAVY DEPARTMENT.			
Stationery, furniture, newspapers, plans, drawings, drawing materials, horses, carriages, freight, expressage, postage, and other absolutely necessary expenses of the Navy Department and its various bureaus and offices (act May 28, 1896)		11,000	11,000
PRINTING AND BINDING.			
Printing and binding for the Navy Department, including $12,000 for the Hydrographic Office, to be executed under the direction of the Public Printer (act June 11, 1896)		90,000	70,000
SALARIES, OFFICE OF JUDGE-ADVOCATE-GENERAL.			
Chief clerk, in lieu of one clerk of class 4 (act June 8, 1881, R. S., 21, pp. 27, 164, secs. 167, 1; act May 28, 1896, P. E. L., p. 165, sec. 2)	1,800		
One clerk of class 4 (same acts)	1,800		
One clerk of class 3 (same acts)	1,600		
One clerk of class 2 (same acts)	1,400		
One clerk of class 1 (same acts)	1,200		
One clerk (same acts)	1,000		
One clerk (same acts)	900		
One laborer (same acts)	660		
		10,360	10,460
NOTE.—One of the clerks of class 4 now provided for has been actually performing the duties of chief clerk for some time past. His designation as such will promote the efficient organization of the office without involving any increase in his compensation or any change whatever in the amounts appropriated.			

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Navy Department—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
OFFICE OF THE SECRETARY.			
Library of the Navy Department.			
Salaries:			
One clerk of class 1 * (act May 28, 1896)	$1,200		
One assistant messenger at $720 (same act)	720		
One laborer at $660 (same act)	660		
		$2,580	$2,380
Professional books and periodicals for the library (same act)	500	500	500
NOTE.—The clerk at $1,000 appropriated for in the fiscal year 1897 is employed in the Bureau of Construction and Repair, and will be estimated for under that Bureau.			
Office of Naval Records of the Rebellion.			
Salaries:			
Two clerks of class 4 (act May 28, 1896)	3,600		
Two clerks of class 2† (same act)	2,800		
Two clerks of class 1 (same act)	2,400		
Two clerks, at $1,000 each (same act)	2,000		
Two copyists at $900 each (same act)	1,800		
Four copyists, at $720 each (same act)	2,880		
		15,480	15,680
Necessary traveling expenses for collection of records (same act)	400	400	600
NOTE.—One clerk of class 3 appropriated for under Naval War Records in fiscal year 1897 has been employed in the Bureau of Steam Engineering, and will be estimated for under that Bureau.			
Publication of the Official Naval Records of the Rebellion: For continuing the publication of an edition of 11,000‡ copies of the Official Records of the Union and Confederate Navies in the War of the Rebellion, in accordance with the plan approved by the Secretary of the Navy under the act of Congress approved July 31, 1894, and for the purpose of making such maps and illustrations as relate to the work, and for printing, binding, and wrapping 1,000 additional copies of series 1, volumes 5 and 6,§ for supplying officers of the Navy, and for the compensation of such temporary expert services in connection with the preparation, publication, and distribution of said records as may be deemed necessary by the Secretary of the Navy, such experts to be selected and appointed by the Secretary of the Navy, from time to time as the necessity therefor arises, the sum of $51,300: *Provided*, That hereafter the preparation of said records shall be conducted under the Secretary of the Navy, by a board of three persons, one of whom shall be an officer of the Navy, to be selected by the Secretary of the Navy, and two civilian experts to be appointed by the Secretary of the Navy, the compensation of said civilian experts to be fixed by the Secretary of the Navy and to be paid from this appropriation (act May 28, 1896)	51,300	51,300	18,000
SALARIES, OFFICE OF NAVAL INTELLIGENCE.			
One clerk of class 1 (act May 28, 1896)	1,200		
One assistant draftsman (submitted)	1,400		
One laborer (act May 28, 1896)	660		
		3,260	3,260
NOTE.—One clerk of class 1 has been detailed to duty in this office and is to be dropped from the rolls of the Bureau of Supplies and Accounts.			
One laborer has been detailed to this office and is to be dropped from the rolls of the Nautical Almanac Office.			

Respectfully submitted.

RICHARD WAINWRIGHT,
Chief Intelligence Officer.

September 30, 1896.

* The clerk of class 1 now employed in the library is appropriated for in the fiscal year 1897 in the Office of Judge-Advocate-General.

† One of the two clerks of class 2 is now appropriated for on the rolls of the Bureau of Equipment.

‡ The first edition authorized by Congress was 10,000 copies, but by an act approved May 28, 1896, an extra edition of 1,000 copies of series 1, volumes 1, 2, 3, and 4, was authorized, increasing the Department's quota by that number. Hence, to make the sets of the publication already printed complete, it is necessary to permanently increase the edition of the work to 11,000 copies.

§ Series 1, volumes 5 and 6, will be in print before the appropriations above estimated will be available, and no provision by law has been made for the printing of an extra edition of 1,000 copies of *these two volumes*. In order to make the sets complete, therefore, for the increased edition of 11,000 *copies, the above item has been introduced into the estimate.*

es of appropriations required for the service of the fiscal year ending June 30, 1898, by the Navy Department—Continued.

iled objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
PAY OF THE NAVY.			
ficers on sea duty; officers on shore and other officers on waiting orders; officers on the retired lerks to commandants of yards and stations; to paymasters at yards and stations; general epers; receiving ships and other vessels; extra men reenlisting under honorable discharge; t on deposits by men; pay of petty officers, seamen, and apprentice boys, including men engineer's force and for the Coast Survey service sh Commission; 11,000 men and 500 apprentices training at training station and on board trainips, and for men detailed for duty with Naval at the pay prescribed by law. (R. S., p. 246, sec. 248, sec. 1368; p. 265, sec. 1556; p. 269, sec. 1569; p 1673; p. 272, sec. 1595; acts May 12, 1879, vol. 21, 1, Aug. 5, 1882, vol. 22, pp. 285–287, sec. 1; Mar. 3, l. 22, pp. 472, 473, sec. 1; Mar. 3, 1885, vol. 23, p. 340, Mar. 3, 1889, vol. 25, p. 809, sec. 1; July 19, 1892, vol. 6, sec. 1; Mar. 3, 1893, vol. 27, p. 715, sec. 1; July 26, l. 28, pp. 123–137, sec. 1; Mar. 2, 1895; Apr. 24, 1896; 1, 1896.)	.....	$8,235,385	$8,100,873
—The foregoing estimate is made up as follows:			
469 officers on the active list.....	$3,360,850		
96 naval cadets under instruction	148,000		
39 officers on the retired list.....	977,051		
05 clerks.....	135 400		
1,000 petty officers, seamen, and other d men	3,408,895		
0 apprentice boys at training stations board training ships.....	54,000		
ay of petty officers and seamen, reenunder honorable discharge.....	141,189		
interest on deposit by men, act Feb-, 1889.....	10,000		
tal.....	8,235,385		
PAY, MISCELLANEOUS.			
missions and interest; transportation of funds; ge; mileage to officers while traveling under in the United States, and for actual personal ex- of officers while traveling abroad under orders, r traveling expenses of apothecaries, yeomen, vilian employees, and for actual and necessary ng expenses of naval cadets while proceeding heir homes to the Naval Academy for examina- d appointment as cadets; for rent and furniture dings and offices not in navy-yards; expenses of martial, prisoners and prisons, and courts of in- boards of inspection, examining boards, with and witnesses' fees, and traveling expenses and stationery and recording; expenses of purchas- ymasters' offices of the various cities, including furniture, fuel, stationery, and incidental ex- ; newspapers and advertising; foreign postage; iphing, foreign and domestic; telephones, copy- are of library, including purchase of books, pho- hs, prints, manuscripts, and periodicals; ferriage, nd express fees; costs of suits; commissions, its, diplomas, and discharges; relief of vessels ress, canal tolls and pilotage; recovery of valua- om shipwreck; quarantine expenses; reports; sional investigation; cost of special instruction, ne or abroad, in maintenance of students and és and information from abroad, and the collec- d classification thereof, and other necessary in- al expenses, $300,000. (Act June 10, 1896).....	$300,000	300,000	260,000
CONTINGENT NAVY.			
rgencies and extraordinary expenses arising at or abroad, but impossible to be anticipated or ied, exclusive of personal services in the Navy tment or any of its subordinate bureaus or offices shington D. C. (act June 10, 1896).....	.....	7,000	7,000

Estimate of the amount required to pay retired officers of the United States Navy for the year ending June 30, 1898.

RETIRED LIST.

Grade.	Number.	Pay per annum.	Total.	Grade.	Number.	Pay per annum.	Total.
Rear-admirals	2	$6,000	$12,000	Pay inspectors	3	$3,300	$9,900
Do	32	4,500	144,000	Do	1	1,500	1,500
Commodores	8	3,750	30,000	Paymasters	6	3,150	18,900
Captains	6	3,375	20,250	Do	2	2,400	4,800
Do	2	2,625	5,250	Do	1	1,400	1,400
Do	1	2,250	2,250	Passed assistant paymasters	1	1,500	1,500
Do	1	1,950	1,950	Assistant paymasters	1	1,425	1,425
Commanders	10	2,625	26,250	Do	1	600	600
Do	1	2,100	2,100	Chief engineers	1	3,750	3,750
Do	2	1,400	2,800	Do	23	3,300	75,900
Do	1	1,150	1,150	Do	7	3,150	22,050
Lieutenant-commanders	12	2,250	27,000	Do	14	2,625	36,750
Do	8	2,100	16,800	Do	1	2,400	2,400
Do	1	1,950	1,950	Passed assistant engineers	4	2,025	8,100
Do	1	1,500	1,500	Do	2	1,838	3,676
Do	1	1,100	1,100	Do	21	1,650	34,650
Do	1	700	700	Do	2	1,500	3,000
Lieutenants	34	1,950	66,300	Do	3	1,275	3,825
Do	6	1,800	10,800	Do	1	1,100	1,100
Do	2	1,200	2,400	Do	1	850	850
Do	5	900	4,500	Do	1	400	400
Lieutenants (junior grade)	9	1,500	13,500	Assistant engineers	22	1,425	31,350
Do	1	1,350	1,350	Do	3	1,275	3,825
Do	1	900	900	Do	1	950	950
Ensigns	13	1,050	13,650	Do	1	850	850
Do	1	900	900	Do	1	600	600
Do	1	500	500	Do	1	500	500
Medical directors	4	3,750	15,000	Chaplains	5	2,100	10,500
Do	13	3,300	42,900	Professors of mathematics	3	2,625	7,875
Medical inspectors	6	3,300	19,800	Naval constructors	4	3,150	12,600
Surgeons	2	3,150	6,300	Civil engineers	1	3,250	3,250
Do	4	2,625	10,500	Boatswains	17	1,350	22,950
Do	5	2,400	12,000	Gunners	29	1,350	39,150
Do	2	2,100	4,200	Carpenters	19	1,350	25,650
Passed assistant surgeons	7	1,650	11,550	Sailmakers	13	1,350	17,550
Do	1	1,100	1,100	Mates	4	900	3,000
Assistant surgeons	3	1,425	4,275				
Do	2	1,275	2,550				
Do	1	850	850	Total	439		977,051
Pay directors	5	3,300	16,500				

Estimate of the amount required to pay the officers of the United States Navy for the fiscal year ending June 30, 1898—Continued.

ACTIVE LIST—Continued.

No.	Grade.	Sea duty.			Other duty.		
		No.	Pay per annum.	Total.	No	Pay per annum.	Total.
4	Carpenters (second 3 years)	1	$1,300	$1,300	3	$1,000	$3,000
9	Carpenters (first 3 years)	6	1,200	7,200	3	900	2,700
16	Sailmakers (after 12 years from date of appointment)	1	1,800	1,800	15	1,600	24,000
1	Sailmakers (third 3 years)	1	1,400	1,400			
15	Gunners (after 12 years from date of appointment)	2	1,800	3,600	13	1,600	20,800
3	Gunners (third 3 years)	5	1,400	7,000			
6	Gunners (second 3 years)	4	1,300	5,200	2	1,000	2,000
15	Gunners (first 3 years)	11	1,200	13,200	4	900	3,600
18	Mates	14	1,200	16,800	4	900	3,600
1,469	Total	843		1,796,600	626		1,564,250

Total pay for 1,469 officers on the active list	$3,360,850
Pay for 296 naval cadets (under instruction at the Naval Academy) at $500 per annum	148,000
Aggregate	3,508,850

Statement of proposals for the construction of battle ships Nos. 5 and 6, received under the Department's advertisement of September 14, 1895.

Name and address of bidder.	For one vessel.	For two vessels (each).	For three vessels.
Class 1 (Department's plans).			
The William Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa	$2,820,000	$2,750,000	
Union Iron Works, San Francisco, Cal	2,740,000	2,690,000	
Newport News Ship Building and Dry Dock Co., Newport News, Va	2,350,000	* 2,250,000	
Class 2 (bidder's plans).			
The William Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa	2,500,000	{ 2,450,000 / 3,850,000 }	$8,000,000
Union Iron Works, San Francisco, Cal	2,650,000	2,640,000	

* Contract awarded.

Statement of proposals for the construction of battle ships Nos. 7, 8, and 9, received under the Department's advertisement of June 25, 1896.

Name and address of bidder.	For one vessel.	For two vessels (each).
Class 1 (Department's plans).		
John H. Dialogue & Son, Camden, N. J	$2,661,000	
Bath Iron Works, Bath, Me	2,680,000	
Newport News Ship Building and Dry Dock Co., Newport News, Va	* 2,595,000	
Union Iron Works, San Francisco, Cal	* 2,674,950	
The William Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa	* 2,650,000	$2,650,000
Class 2 (bidder's plans).		
No bids received.		

* Contract awarded.

Estimates of the amount required to pay the officers of the United States Navy for the fiscal year ending June 30, 1898.

ACTIVE LIST.

No.	Grade.	Sea duty.			Other duty.		
		No.	Pay per annum.	Total.	No.	Pay per annum.	Total.
5	Rear-admirals	2	$6,000	$12,000	3	$5,000	$15,000
1	Rear-admiral (chief of bureau)	....	.....	.....	1	6,000	6,000
1	Commodore (chief of bureau)	....	.....	.....	1	5,000	5,000
9	Commodore	2	5,000	10,000	7	4,000	28,000
1	Captain (chief of bureau)	....	.....	.....	1	5,000	5,000
43	Captains	26	4,500	117,000	17	3,500	59,500
1	Captain (assistant to the bureau)	....	.....	.....	1	4,500	4,500
1	Commander (chief of bureau)	....	.....	.....	1	5,000	5,000
84	Commanders	17	3,500	59,500	67	3,000	201,000
34	Lieutenant-commanders (after 4 years)	15	3,000	45,000	19	2,600	49,400
40	Lieutenant-commanders (first 4 years)	25	2,800	70,000	15	2,400	36,000
1	Lieutenant (judge-advocate general)	....	.....	.....	1	3,500	3,500
181	Lieutenant (after 5 years)	123	2,600	319,800	58	2,200	127,600
69	Lieutenant (first 5 years)	51	2,400	122,400	18	2,000	36,000
75	Lieutenant, junior grade (first 5 years)	54	1,800	97,200	21	1,500	31,500
1	Lieutenant (not in line of promotion)	....	.....	.....	1	2,000	2,000
71	Ensigns (after 5 years)	55	1,400	77,000	16	1,200	19,200
107	Ensigns (first 5 years)	88	1,200	105,600	19	1,000	19,000
52	Naval cadets (under-graduates)	51	950	48,450	1	500	500
15	Medical directors (after 20 years from date of commission as surgeon)	....	.....	.....	15	4,000	60,000
4	Medical inspectors (fleet surgeons)	4	4,400	17,600	....	.....	.....
10	Medical inspectors	....	.....	.....	10	4,000	40,000
1	Medical inspector (chief of bureau)	....	.....	.....	1	5,000	5,000
8	Surgeons (third 5 years)	5	3,500	17,500	3	3,200	9,600
19	Surgeons (second 5 years)	6	3,200	19,200	13	2,800	36,400
23	Surgeons (first 5 years)	15	2,800	42,000	8	2,400	19,200
24	Passed assistant surgeons (after 5 years)	8	2,800	22,400	16	2,000	32,000
37	Passed assistant surgeons (first 5 years)	26	2,000	52,000	11	1,800	19,800
18	Assistant surgeons (first 5 years)	11	1,700	18,700	7	1,400	9,800
1	Pay director (chief of bureau)	....	.....	.....	1	5,000	5,000
12	Pay directors (after 20 years from date of commission as paymaster)	....	.....	.....	12	4,000	48,000
1	Pay inspector (fleet paymaster)	1	4,400	4,400	....	.....	.....
12	Pay inspectors	1	4,400	4,400	11	4,400	48,400
3	Paymasters (fleet)	3	4,400	13,200	....	.....	.....
4	Paymasters (after 20 years)	....	.....	.....	4	4,000	16,000
9	Paymasters (fourth 5 years)	4	3,700	14,800	5	3,600	18,000
4	Paymasters (third 5 years)	2	3,500	7,000	2	3,200	6,400
5	Paymasters (second 5 years)	2	3,200	6,400	3	2,800	8,400
15	Paymasters (first 5 years)	13	2,800	36,400	2	2,400	4,800
20	Passed assistant paymasters (first 5 years)	9	2,000	18,000	11	1,800	19,800
10	Assistant paymasters	10	1,700	17,000	....	.....	.....
1	Chief engineer (chief of bureau)	....	.....	.....	1	5,000	5,000
4	Chief engineers (fleet engineers)	4	4,400	17,600	....	.....	.....
14	Chief engineers (after 20 years)	....	.....	.....	14	4,000	56,000
1	Chief engineer (fourth 5 years)	....	.....	.....	1	3,600	3,600
6	Chief engineers (third 5 years)	3	3,500	10,500	3	3,200	9,600
10	Chief engineers (second 5 years)	7	3,200	22,400	3	2,800	8,400
34	Chief engineers (first 5 years)	16	2,800	44,800	18	2,400	43,200
5	Passed assistant engineers (third 5 years)	2	2,700	5,400	3	2,350	7,050
13	Passed assistant engineers (second 5 years)	7	2,450	17,150	6	2,250	13,500
48	Passed assistant engineers (first 5 years)	31	2,000	62,000	17	1,800	30,600
46	Assistant engineers	37	1,900	70,300	9	1,600	14,400
24	Cadets (engineer division)	24	950	22,800	....	.....	.....
6	Chaplains (first 5 years)	4	2,500	10,000	2	2,000	4,000
17	Chaplains (after 5 years)	5	2,800	14,000	12	2,300	27,600
12	Professor of mathematics	....	.....	.....	22	3,500	42,000
1	Chief constructor (chief of bureau)	....	.....	.....	1	5,000	5,000
2	Naval constructor (fourth 5 years)	....	.....	.....	2	4,000	8,000
6	Naval constructor (second 5 years)	....	.....	.....	6	3,400	20,400
5	Naval constructor (first 5 years)	....	.....	.....	0	3,200	16,000
22	Assistant naval constructor (after 4 years)	1	2,200	2,200	21	2,200	46,200
5	Civil engineers (after 15 years)	....	.....	.....	5	3,500	17,500
4	Civil engineers (third 5 years)	....	.....	.....	4	3,000	12,000
1	Civil engineers (second 5 years)	....	.....	.....	1	2,700	2,700
2	Civil engineers (first 5 years)	....	.....	.....	2	2,400	4,800
19	Boatswains (after 12 years from date of appointment)	5	1,800	9,000	14	1,600	22,400
6	Boatswains (third 3 years)	1	1,400	1,400	5	1,300	6,500
9	Boatswains (first 3 years)	7	1,200	8,400	2	900	1,800
22	Carpenters (after 12 years from date of appointment)	12	1,800	21,600	10	1,600	16,000
2	Carpenters (fourth 3 years)	2	1,600	3,200	....	.....	.....
1	Carpenters (third 3 years)	1	1,400	1,400	....	.....	.....

Statement of proposals for the construction of torpedo boats Nos. 12 to 18, etc.—Continued.

Name and address of bidder.	Class 2 (bidder's plans) 20 and 22½ knot torpedo boats.		
	One 20-knot and one 22½ knot.		Both.
Columbian Iron Works and Dry Dock Co., Baltimore, Md	$45,000	$79,100	$124,100
Moran Brothers Co., Seattle, Wash	57,658	98,295	155,953
Herreshoff Manufacturing Co., Bristol, R. I	38,750	82,000	120,750
George Lawley & Son, South Boston, Mass	61,000	101,250	162,250

Name and address of bidder.	Class 2 (bidder's plans), 20 and 22½ knot torpedo boats.		
	One 20-knot and two 22½-knot (each).		All.
Columbian Iron Works and Dry Dock Co., Baltimore, Md	$45,000	$79,100	$203,200
Moran Brothers Co., Seattle, Wash	57,658	95,277	248,212
Herreshoff Manufacturing Co., Bristol, R. I	38,750	80,000	198,750
George Lawley & Son, South Boston, Mass	61,000	97,500	256,000

Name and address of bidder.	Class 2 (bidder's plans), 20 and 22½ knot torpedo boats.		
	Two 20 knot (each) and one 22½-knot.		All.
Columbian Iron Works and Dry Dock Co., Baltimore, Md	$45,000	$79,100	$167,100
Moran Brothers Co., Seattle, Wash	56,505	98,224	211,214
Herreshoff Manufacturing Co., Bristol, R. I	*†137,500	*‡82,000	157,000
George Lawley & Son, South Boston, Mass	57,250	101,000	215,500

* Contract awarded.
† $1,500 added for galvanizing certain parts.
‡ $3,000 added for galvanizing certain parts.

Statement of proposals for the manufacture and delivery of nickel steel armor plates and appurtenances for battle ships Nos. 5 and 6, received under the Department's advertisement of April 15, 1896.

Exhibit.	No. of pieces.	Class A.—For *Kearsarge*.	Harveyed.	Thickness.	Approximate weight.	Bethlehem Iron Co.		Carnegie Steel Co.	
						Per ton.	Aggregate.	Per ton.	Aggregate.
				Inches.	*Tons.*				
1	6	Side armor, forward	Yes.	4	60	$570.80	$34,248.00	$565.80	$33,948.00
1	6	Side armor, double-tapered plates.	Yes.	4 to 15	137	520.40	71,294.80	515.40	70,609.80
1	18	Side armor, amidship	Yes.	9.5 to 16.5	635	520.40	330,454.00	515.40	327,279.00
1	4	Side armor, triangular athwartship.	Yes.	10 and 12	31	520.40	16,132.40	515.40	15,977.40
					863				
		Bolts and nuts			10	400.00	4,000.00	400.00	4,000.00
		Total Class A, Exhibit 1					456,129.20		*451,814.20
2	10	Armor shelf, 13" B. L. R. turrets.	No.	2	17	525.00	8,925.00	532.50	9,052.50
2	2	Plate A, 13" B. L. R. turrets	Yes.	17	76	575.40	43,730.40	582.90	44,300.40
2	4	Plate B, 13" B. L. R. turrets	Yes.	15	172	575.40	98,968.80	582.90	100,258.80
2	4	Plate C, 12" B. L. R. turrets	Yes.	15	127	575.40	73,075.80	582.90	74,028.30
2	2	Plate D, 12" B. L. R. turrets	Yes.	15	41	575.40	23,591.40	582.90	23,898.90
2	8	Tops, 13" B. L. R. turrets	No.	3.5	67	525.00	35,175.00	532.50	35,677.50
2	4	Seam straps, 13" B. L. R. turrets.	No.		6	525.00	3,150.00	532.50	3,195.00
2	6	Sight-hood tops, 13" B. L. R. turrets.	No.	2	2	525.00	1,050.00	532.50	1,065.00
2	6	Sight hoods, 13" B. L. R. turrets.	No.	8	11	525.00	5,775.00	532.50	5,857.50
					519				
		Bolts and nuts			4	400.00	1,600.00	400.00	1,600.05
		Total Class A, Exhibit 2					*295,041.40		298,933.90

* Contract awarded.

Statement of proposals for the construction of torpedo boats Nos. 9, 10, and 11 (30-knot boats), received under the Department's advertisement of June 18, 1896.

Name and address of bidder.	For one vessel.	For two vessels (each).	For three vessels (each).
Bidder's plans.			
Union Iron Works, San Francisco, Cal.	* $227,500		
Bath Iron Works, Bath, Me.		* $194,000 235,000	$189,000
Herreshoff Manufacturing Co., Bristol, R. I.	218,000	209,000	206,000
Painton Electrical Steamship and Construction Co., Alexandria, Va.	265,000		† 795,000
John H. Dialogue & Son, Camden, N. J.	260,000 275,000	255,000 270,000	

* Contract awarded. † All.

Statement of proposals for the construction of torpedo boats Nos. 12 to 18, inclusive, received under the Department's advertisement of June 18, 1896.

Name and address of bidder.	Class 1 (Department's plans), 20-knot torpedo boats.		
	For one vessel.	For two vessels (each).	For three vessels (each).
Columbian Iron Works and Dry Dock Co., Baltimore, Md.	* $49,000	$49,000	$49,000
Moran Brothers Co., Seattle, Wash.	59,840	58,675	56,928
Wolff & Zwicker, Portland, Oreg.	49,000	47,500	45,000
Providence Steam Engine Co., Providence, R. I.		51,600	48,650
The Charles Hillman Ship and Engine Building Co., Philadelphia, Pa.	* 48,500	48,000	
John H. Dialogue & Son, Camden, N. J.	69,250	68,500	

Name and address of bidder.	Class 2 (bidder's plans), 20-knot torpedo boats.		
	For one vessel.	For two vessels (each).	For three vessels (each).
Columbian Iron Works and Dry Dock Co., Baltimore, Md.	$45,000	$45,000	$45,000
Moran Brothers Co., Seattle, Wash.	58,240	57,075	55,329
Bath Iron Works, Bath, Me.		81,000	
Herreshoff Manufacturing Co., Bristol, R. I.	40,000	37,500	37,500
Lewis Nixon, Elizabeth, N. J.	69,000	68,000	
George Lawley & Son, South Boston, Mass.	61,500	57,625	56,835

Name and address of bidder.	Class 2 (bidder's plans), 22½-knot torpedo boats.		
	For one vessel.	For two vessels (each).	For three vessels (each).
Columbian Iron Works and Dry Dock Co., Baltimore, Md.	$79,100	$79,100	$79,100
Moran Brothers Co., Seattle, Wash.	99,216	96,239	94,255
Bath Iron Works, Bath, Me.	85,000	125,000	80,000
Herreshoff Manufacturing Co., Bristol, R. I.	† 82,500 84,000 ‡ 92,500	† 78,500 80,000 ‡ 92,500	† 78,500 80,000 ‡ 92,500
Wolff & Zwicker, Portland, Oreg.	83,800 85,839	79,500 * 81,546	75,100 77,150
George Lawley & Son, South Boston, Mass.	83,500 102,000	80,000 98,000	78,800 97,000

* Contract awarded.
† Cushing plans, with certain exceptions.
‡ Cushing plans.

Statement of proposals for the construction of torpedo boats Nos. 12 to 18, etc.—Continued.

Name and address of bidder.	Class 2 (bidder's plans), 20 and 22½ knot torpedo boats.		
	One 20-knot and one 22½-knot.		Both.
Columbian Iron Works and Dry Dock Co., Baltimore, Md	$45,000	$79,100	$124 100
Moran Brothers Co., Seattle, Wash	57,658	98,295	155,953
Herreshoff Manufacturing Co., Bristol, R. I	38,750	82,000	120,750
George Lawley & Son, South Boston, Mass	61,000	101,250	162,250

Name and address of bidder.	Class 2 (bidder's plans), 20 and 22½ knot torpedo boats.		
	One 20-knot and two 22½-knot (each).		All.
Columbian Iron Works and Dry Dock Co., Baltimore, Md	$45,000	$79,100	$203,200
Moran Brothers Co., Seattle, Wash	57,658	95,277	248,212
Herreshoff Manufacturing Co., Bristol, R. I	38,750	80,000	198,750
George Lawley & Son, South Boston, Mass	61,000	97,500	256,000

Name and address of bidder.	Class 2 (bidder's plans), 20 and 22½ knot torpedo boats.		
	Two 20-knot (each) and one 22½-knot.		All.
Columbian Iron Works and Dry Dock Co., Baltimore, Md	$45,000	$79,100	$167,100
Moran Brothers Co., Seattle, Wash	56,505	98,224	211,234
Herreshoff Manufacturing Co., Bristol, R. I	*†37,500	*‡82,000	157,000
George Lawley & Son, South Boston, Mass	57,250	101,000	215,500

* Contract awarded.
†$1,500 added for galvanizing certain parts.
‡$3,000 added for galvanizing certain parts.

Statement of proposals for the manufacture and delivery of nickel steel armor plates and appurtenances for battle ships Nos. 5 and 6, received under the Department's advertisement of April 15, 1896.

Exhibit.	No. of pieces.	Class A.—For *Kearsarge.*	Harveyed.	Thickness.	Approximate weight.	Bethlehem Iron Co.		Carnegie Steel Co.	
						Per ton.	Aggregate.	Per ton.	Aggregate.
				Inches.	*Tons.*				
1	6	Side armor, forward	Yes.	4	60	$570.80	$34,248.00	$565.80	$33,948.00
1	6	Side armor, double-tapered plates.	Yes.	4 to 15	137	520.40	71,294.80	515.40	70,609.80
1	18	Side armor, amidship	Yes.	9.5 to 16.5	635	520.40	330,454.00	515.40	327,279.00
1	4	Side armor, triangular athwartship.	Yes.	10 and 12	31	520.40	16,132.40	515.40	15,977.40
					863				
		Bolts and nuts			10	400.00	4,000.00	400.00	4,000.00
		Total Class A, Exhibit 1					456,129.20		*451,814.20
2	10	Armor shelf, 13" B. L. R. turrets.	No.	2	17	525.00	8,925.00	532.50	9,052.50
2	2	Plate A, 13" B. L. R. turrets	Yes.	17	76	575.40	43,730.40	582.90	44,300.40
2	4	Plate B, 13" B. L. R. turrets	Yes.	15	172	575.40	98,968.80	582.90	100,258.80
2	4	Plate C, 13" B. L. R. turrets	Yes.	15	127	575.40	73,075.80	582.90	74,028.30
2	2	Plate D, 13" B. L. R. turrets	Yes.	15	41	575.40	23,591.40	582.90	23,898.90
2	8	Tops, 13" B. L. R. turrets	No.	3.5	67	525.00	35,175.00	532.50	35,677.50
2	4	Seam straps, 13" B. L. R. turrets.	No.		6	525.00	3,150.00	532.50	3,195.00
2	6	Sight-hood tops, 13" B. L. R. turrets.	No.	2	2	525.00	1,050.00	532.50	1,065.00
2	6	Sight hoods, 13" B. L. R. turrets.	No.	8	11	525.00	5,775.00	532.50	5,857.50
					519				
		Bolts and nuts			4	400.00	1,600.00	400.00	1,600.05
		Total Class A, Exhibit 2					*295,041.40		298,933.90

* Contract awarded.

Statement of proposals for the manufacture and delivery of nickel steel armor plates and appurtenances for battle ships Nos. 5 and 6, etc.—Continued.

Exhibit.	No. of pieces.	Class A.—For *Kearsarge*.	Harveyed.	Thickness.	Approximate weight.	Bethlehem Iron Co.		Carnegie Steel Co.	
						Per ton.	Aggregate.	Per ton.	Aggregate.
				Inches.	*Tons.*				
3	22	13" B. L. R. barbettes	Yes.	12.5 to 15.	568	$580.40	$329,667.20	$575.40	$326,827.20
		Bolts and nuts			7	400.00	2,800.00	400.00	2,800.00
		Total Class A, Exhibit 3.					332,467.20		* 329,627.20
4	2	Plate A, 8" B. L. R. turrets	Yes.	11	44	585.40	25,757.60	575.40	25,317.60
4	4	Plate B, 8" B. L. R. turrets	Yes.	9	93	585.40	54,442.20	575.40	53,512.20
4	6	Tops, 8" B. L. R. turrets	No.	2	15	535.00	8,025.00	525.00	7,875.00
4	4	Sight-hood tops	No.	1.5	1	535.00	535.00	525.00	525.00
4	4	Seam straps	No.		2	535.00	1,070.00	525.00	1,050.00
4	4	Sight hoods	No.	7	7	535.00	3,745.00	525.00	3,675.00
					162				
		Bolts and nuts			1	400.00	400.00	400.00	400.00
		Total Class A, Exhibit 4.					93,974.80		* 92,354.80
5	12	Superstructure, diagonal	Yes.	6	105	553.40	58,107.00	558.40	58,632.00
5	14	Superstructure, side	Yes.	6	145	628.40	91,118.00	638.40	92,568.00
					250				
		Bolts and nuts			5	400.00	2,000.00	400.00	2,000.00
		Total Class A, Exhibit 5.					* 151,225.00		153,200.00
6	4	Casemate, athwartship	Yes.	4	34	585.80	19,917.20	575.80	19,577.20
6	22	Casemate, side	Yes.	5	292	563.40	164,512.80	553.40	161,592.80
					326				
		Bolts and nuts			3	400.00	1,200.00	400.00	1,200.00
		Total Class A, Exhibit 6.					185,630.00		* 182,370.00
7	1	Conning-tower tube	No.	7	16	525.00	8,400.00	535.00	8,560.00
7	....	Conning-tower armor (in at least 2 plates).	Yes.	10	44	575.40	25,317.60	585.40	25,757.60
7	1	Conning-tower shield	Yes.	10	12	575.40	6,904.80	585.40	7,024.80
7	1	Conning-tower top	No.	2	3	525.00	1,575.00	535.00	1,605.00
7	1	Conning-tower shield top plate.	No.	2	1	525.00	525.00	535.00	535.00
		Total Class A, Exhibit 7.			76		* 42,722.40		43,482.40
8	12	Splinter bulkheads	No.	2	36	450.00	16,200.00	455.00	16,380.00
		Total Class A, Exhibit 8.					* 16,200.00		16,380.00
		Aggregate bid for Class A.					1,573,390.00		1,568,162.50

Exhibit.	No. of pieces.	Class B.—For *Kentucky*.	Harveyed.	Thickness.	Approximate weight.	Bethlehem Iron Co.		Carnegie Steel Co.	
						Per ton.	Aggregate.	Per ton.	Aggregate.
				Inches.	*Tons.*				
1	6	Side armor, forward	Yes.	4	60	$565.80	$33,948.00	$570.80	$34,248.00
1	6	Side armor, double-tapered plates.	Yes.	4 to 15	137	515.40	70,609.80	520.40	71,294.80
1	18	Side armor, amidship	Yes.	9.5 to 16.5	635	515.40	327,279.00	520.40	330,454.00
1	4	Side armor, triangular athwartship.	Yes.	10 and 12.	31	515.40	15,977.40	520.40	16,132.40
					863				
		Bolts and nuts			10	400.00	4,000.00	400.00	4,000.00
		Total Class B, Exhibit 1.					* 451,814.20		456,129.20

* Contract awarded.

Statement of proposals for the manufacture and delivery of nickel steel armor plates and appurtenances for battle ships Nos. 5 and 6, etc.—Continued.

Exhibit.	No. of pieces.	Class B.—For *Kentucky*.	Harveyed.	Thickness.	Approximate weight.	Bethlehem Iron Co.		Carnegie Steel Co.	
						Per ton.	Aggregate.	Per ton.	Aggregate.
				Inches.	*Tons.*				
2	10	Armor shelf, 13' B. L. R. turrets.	No..	2.....	17	$525.00	$8,925.00	$532.50	$9,052.50
2	2	Plate A, 13'' B. L. R. turrets..	Yes.	17.....	76	575.00	43,730.40	582.90	44,300.40
2	4	Plate B, 13'' B. L. R. turrets..	Yes.	15.....	172	575.00	98,968.80	582.90	100,258.80
2	4	Plate C, 13'' B. L. R. turrets..	Yes	15.....	127	575.00	73,075.80	582.90	74,028.30
2	2	Plate D, 13'' B. L. R. turrets..	Yes	15.....	41	575.00	23,591.40	582.90	23,898.90
2	8	Tops, 13'' B. L. R. turrets.....	No..	3.5.....	67	525.00	35,175.00	532.50	35,677.50
2	4	Seam straps, 13'' B. L. R. turrets.	No..	.....	6	525.00	3,150.00	532.50	3,195.00
2	6	Sight-hood tops, 13'' B. L. R. turrets.	No..	2.....	2	525.00	1,050.00	532.50	1,065.00
2	6	Sight hoods, 13'' B. L. R. turrets.	No..	8.....	11	525.00	5,775.00	532.50	5,857.50
					519				
		Bolts and nuts	.....	.....	4	400.00	1,600.00	400.00	1,600.00
		Total Class B, Exhibit 2.	.....	.....	.....	.....	*295,041.40	.....	298,933.90
3	22	13'' B. L. R. barbettes.....	Yes.	12.5 to 15.	568	580.40	329,667.20	575.40	326,827.20
		Bolts and nuts	.....	.....	7	400.00	2,800.00	400.00	2,800.00
		Total Class B, Exhibit 3.	.....	.....	.....	.....	332,467.20	.....	*329,627.20
4	2	Plate A, 8'' B. L. R. turrets...	Yes.	11.....	44	585.40	25,757.60	575.40	25,317.60
4	4	Plate B, 8'' B. L. R. turrets...	Yes.	9.....	93	585.40	54,442.20	575.40	53,512.20
4	6	Tops, 8'' B. L. R. turrets.....	No..	2.....	15	535.00	8,025.00	525.00	7,875.00
4	4	Sight-hood tops	No..	1.5.....	1	535.00	535.00	525.00	525.00
4	4	Seam straps.....	No..	.....	2	535.00	1,070.00	525.00	1,050.00
4	4	Sight hoods	No..	7.....	7	535.00	3,745.00	525.00	3,675.00
					162				
		Bolts and nuts	.....	.....	1	400.00	400.00	400.00	400.00
		Total Class B, Exhibit 4.	.....	.....	.....	.....	93,974.80	.....	*92,354.80
5	12	Superstructure, diagonal.....	Yes.	6.....	105	553.40	58,107.00	558.40	58,632.00
5	14	Superstructure, side.....	Yes.	6.....	145	628.40	91,118.00	638.40	92,568.00
					250				
		Bolts and nuts	.....	.....	5	400.00	2,000.00	400.00	2,000.00
		Total Class B, Exhibit 5.	.....	.....	.....	.....	*151,225.00	.....	153,200.00
6	4	Casemate, sthwartship.....	Yes.	4.....	34	585.80	19,917.20	575.80	19,577.20
6	22	Casemate, side	Yes.	5.....	292	563.40	164,512.80	553.40	161,592.80
					326				
		Bolts and nuts	.....	.....	3	400.00	1,200.00	400.00	1,200.00
		Total Class B, Exhibit 6.	.....	.....	.....	.....	185,630.00	.....	*182,370.00
7	1	Conning-tower tube.....	No..	7.....	16	525.00	8,400.00	535.00	8,560.00
7	....	Conning-tower armor (in at least 2 plates).	Yes.	10.....	44	575.40	25,317.60	585.40	25,757.60
7	1	Conning-tower shield.....	Yes.	10.....	12	575.40	6,904.80	585.40	7,024.80
7	1	Conning-tower top.....	No..	2.....	3	525.00	1,575.00	535.00	1,605.00
7	1	Conning-tower shield top plate.	No..	2.....	1	525.00	525.00	535.00	535.00
		Total Class B, Exhibit 7.	.....	.....	76	.....	*42,722.40	.....	43,482.40
8	12	Splinter bulkheads.....	No..	2.....	36	450.00	16,200.00	455.00	16,380.00
		Total Class B, Exhibit 8.	.....	.....	.....	.....	*16,200.00	.....	16,380.00
		Aggregate bid for class B.....	.....	.....	.....	.....	1,569,075.00	.....	1,572,477.50

*Contract awarded.

Statement of proposals for steel gun forgings for B. L. R., received under the Department's advertisement of January 9, 1896.

Name and address of bidder.	Eight sets, 13-inch.		Eight sets, 8-inch.	
	Price per pound.	Time limit.	Price per pound.	Time limit.
	Cents.	*Days.*	*Cents.*	*Days.*
Bethlehem Iron Co., South Bethlehem, Pa.	* 27.4	365	28.5	330
Midvale Steel Co., Philadelphia, Pa.	27.5	480	* 28	270

* Contract awarded.

Statement of proposals for steel gun forgings for B. L. R., received under the Department's advertisement of July 10, 1896.

Name and address of bidder.	Twenty sets, 4-inch.		Thirty-five sets, 5-inch.		Fifty sets, 6-inch.		Two sets, 8-inch.	
	Price per pound.	Time limit.	Price per pound.	Time limit.	Price per pound.	Time limit.	Price per pound.	Time limit.
	Cents.		*Cents.*		*Cents.*		*Cents.*	
Bethlehem Iron Co., South Bethlehem, Pa.	* 26.5	365 days ..	* 26.5	365 days ..	26.5	547 days ..	* 23.7	210 days.
Midvale Steel Co., Philadelphia, Pa.	27	15 months.	27	15 months.	* 26	15 months.	23.9	8 months.

* Contract awarded.

Statement of proposals received for the manufacture and delivery of Whitehead automobile torpedoes.

Name and address of bidder.	Articles.	Number.	Price for each torpedo.
E. W. Bliss Co., Brooklyn, N. Y.	45 centimeter, 3.55 meter, Whitehead automobile torpedoes, U. S. N., Mark II.	50	* $2,412.50
	45 centimeter, 5 meter, Whitehead automobile torpedoes, U. S. N., Mark III.	100	* 3,137.50

* Contract awarded.

Statement of proposal received for the manufacture and delivery of 4,400 8-inch forged steel shell.

Name and address of bidder.	Price per shell.
United States Projectile Co., Brooklyn, N. Y.	* $27.25

* Contract awarded.

Statement of proposals received for the manufacture and delivery of 1,291 10-inch semi-armor-piercing shell.

Name and address of bidder.	Price per shell.
Midvale Steel Co., Philadelphia, Pa.	* $92.9512
Carpenter Steel Co., Reading, Pa.	108.7942
Sterling Steel Co., Pittsburg, Pa.	114.2857

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	31	32	33	34	35	36	37	38	39	40
Easton & Rupp, Washington, D. C	$0.35	$0.44	$0.52	$0.61	$0.29	$0.09	$0.10	$0.11	$0.12	$0.13
R. Carter Ballantyne, Washington, D. C	.36	.45	.54	.63	.30½	.09	.10½	.11½	.10½	.13½
Manhattan Supply Co., New York, N. Y	.44	.55	.65	.80	.35	.11	.13	.14	.15	.18
Columbia Rubber Works Co., New York, N. Y	*.21½	*.28½	*.32	*.36	*.15½	*.05 5/10 .04 1/10	*.07 .05	*.08 1/10 .05 1/10	*.08 6/10 .05 1/10	*.10 .06 3/10
Wm. Bowles, Philadelphia, Pa	1.00	1.25	1.50	1.75	.85	.25	.29½	.31½	.33½	.37½

Bidder.	Items.									
	41	42	43	44	45	46	47	48	49	50
Easton & Rupp, Washington, D. C	$0.25	$0.28	$0.32	$0.35	$0.25 .40	$0.25 .40	$0.25 .40	$0.25 .40	$0.25 .40	.....
R. Carter Ballantyne, Washington, D. C	.25	.29	.32½	.35½	.44½	.....	.44½	.44½	.44½	.26
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.60	.....	.60	.60	.60	.....
Manhattan Supply Co., New York, N. Y	.11	.35	.40	.45	.....	.....	.....	.....	.....	.....
Columbia Rubber Works Co., New York, N. Y	*.11 1/10	*.14 1/10	*.15½	*.19	.....	.....	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	*.30	*.30	*.30	*.30	*.30	*.20
Wm. Bowles, Philadelphia, Pa	.70	.80	.90	1.00	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	51	52	53	54	55	56	57	58	59	60
Easton & Rupp, Washington, D. C	$0.28 .24	.....	$0.60	.....	$0.60	$0.60	.....	$0.48	$0.37 .48	$0.49 .48
Fred. A. Schmidt, Washington, D. C	.....	.....	.70	$0.70	.70	.70	.....	.....	.....	.....
R. Carter Ballantyne, Washington, D. C	.....	.....	.67½	.67½	.67½	.67½	.....	.74½	.47½	.54
C. S. Braisted, New York, N. Y	*.25	*$0.36 1/10	*.50	*.50	*.50	*.50	*$0.36	*.32	*.25	*.25

Bidder.	Items.									
	61	62	63	64	65	66	67	68	69	70
Easton & Rupp, Washington, D. C	$0.61 .48	$0.48	$0.16 .25	.....	.....	.....	$0.30	$0.70	$0.38	$0.72
Fred. A. Schmidt, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.70	.38	.....
R. Carter Ballantyne, Washington, D. C	.47½	.67½	.....	.....	$0.16	.....	.....	*.70	*.38	*.65½
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.85	.46	.70
Manhattan Supply Co., New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.84	.44	.73
C. S. Braisted, New York, N. Y	*.25	*.25	*19	*$0.30	*.33	*$0.40	*.25	.....	.....	.....

Bidder.	Items.									
	71	72	73	74	75	76	77	78	79	80
Easton & Rupp, Washington, D. C	$0.76	$0.76	$0.76	$0.76	$0.76	$0.55	*$0.68	$0.68	*$0.48	$0.38
R. Carter Ballantyne, Washington, D. C	.76	.76	.76	.76	.76	*.54	.68	*.68	.68	*.36
Wm. H. Teepe, Washington, D. C	.75	.75	.75	.75	.75	.63	.75	.75	.75	.45
Manhattan Supply Co., New York, N. Y	*.74	*.74	*.74	*.74	*.74	.60	.70	.70	.70	.42

* Contract awarded.

Statement of proposals for the purchase of waste paper of the Navy Department, and its several bureaus and offices, during the fiscal year ending June 30, 1897, received under the Department's advertisement of April 20, 1896.

Name and address of bidder.	Price per 100 pounds.
	Cents.
Jefferson I. Lenhart, Philadelphia, Pa	*35
E. G. Wheeler, trustee, Washington, D. C.	31½
J. Dreifus & Co., Alexandria, Va	25

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into for furnishing stationery for the Navy Department, and its several bureaus and offices, during the fiscal year ending June 30, 1897.

Bidder.	Items.									
	1	2	3	4	5	6	7	8	9	10
Easton & Rupp, Washington, D. C.	$1.22 *2.50	$1.42 *2.50	$1.56	$1.96	$1.82	$1.50	$1.62 1.78	$3.30 3.64	$3.30 3.64	*$1.75
R. Carter Ballantyne, Washington, D. C.	1.15	1.35	*1.50	*1.90	*1.75	*1.45 1.60	*1.55 1.70	*3.22 3.58	*3.22 3.58	.....
Wm. H. Teepe, Washington, D. C.	1.30	1.30 1.50	1.67	2.11	1.94	1.78 1.61	1.89 1.72	3.58 3.98	3.58 3.98	1.75
Manhattan Supply Co., New York, N. Y.	1.25	1.60	1.55	2.10	1.95	1.55	1.94	3.45	3.40	3.40

Bidder.	Items.									
	11	12	13	14	15	16	17	18	19	20
Easton & Rupp, Washington, D. C.	$0.80 .70	$1.00 1.10	$0.65	$1.00	*$1.90	$2.85	$4.15	$7.25	*$1.25	$1.58
R. Carter Ballantyne, Washington, D. C.	.....	.....	.....	.....	2.40 2.50	2.25 *2.40	*3.40 3.60	*3.50	1.05 1.40	1.35 1.80
Wm. H. Teepe, Washington, D. C.	.....	.....	.....	.....	2.00	3.00	4.50	.....	1.35	1.70
Manhattan Supply Co., New York, N. Y.	.70	1.40	.40	.50	2.70	3.60	5.20	8.40	1.40	1.70
Wyckoff, Seamans & Benedict, New York, N. Y.	.70	.80	.....	.....	.....	.....	.....	.....	1.26	*1.50
S. H. Mann, Philadelphia, Pa	*.60	*.65	*.27	*.35	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	21	22	23	24	25	26	27	28	29	30
Easton & Rupp, Washington, D. C.	$1.48	$1.86	$2.20	*$1.88	$4.80 *4.50	*$4.80 4.50	$11.75 4.50	*$4.80 4.50	*$4.80 4.50	$0.70
R. Carter Ballantyne, Washington, D. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.72
Manhattan Supply Co., New York, N. Y.	*1.40	*1.70	*2.10	1.90	4.90	4.90	*10.85	4.90	4.90	.85
John C. Parker, Washington, D. C.	.....	.....	.....	.....	4.50	4.50	4.50	4.50	4.50	.....
Columbia Rubber Works Co., New York, N. Y.	.....	.....	.....	.....	.....	.....	.....	.....	.....	*.43½
Rockwell & Rupel Co., Chicago, Ill.	.....	.....	.....	.....	4.50	4.50	7.00	4.50	4.50	.....
Wyckoff, Seamans & Benedict, New York, N. Y.	.99	1.20	1.83	1.68	5.00	5.00	5.00	5.00	5.00	.....
Frank W. McNeal, New York, N. Y.	.....	.....	.....	.....	9.00	9.00	11.80	9.00	9.00	.....
Herman Baumgarten, Washington, D. C.	.....	.....	.....	.....	3.25 3.75	3.25 3.75	3.25 3.75	3.25 3.75	3.25 3.75	.....
Wm. Bowles, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.00

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	31	32	33	34	35	36	37	38	39	40
Easton & Rupp, Washington, D. C	$0.35	$0.44	$0.52	$0.61	$0.29	$0.09	$0.10	$0.11	$0.12	$0.13
R. Carter Ballantyne, Washington, D. C	.36	.45	.54	.63	.30½	.09	.10½	.11½	.10½	.13½
Manhattan Supply Co., New York, N. Y	.44	.55	.65	.80	.35	.11	.13	.14	.15	.18
Columbia Rubber Works Co., New York, N. Y	*.21½	*.28½	*.32	*.36	*.15½	*.05 5/10 .04 1/10	*.07 .05	*.08 5/10 .05 1/10	*.08 5/10 .05 1/10	*.10 .06 5/10
Wm. Bowles, Philadelphia, Pa	1.00	1.25	1.50	1.75	.85	.25	.29½	.31½	.33½	.37½

Bidder.	Items.									
	41	42	43	44	45	46	47	48	49	50
Easton & Rupp, Washington, D. C	$0.25	$0.28	$0.32	$0.35	$0.25 .40	$0.25 .40	$0.25 .40	$0.25 .40	$0.25 .40	.....
R. Carter Ballantyne, Washington, D. C	.25	.29	.32½	.35½	.44½	.....	.44½	.44½	.44½	.26
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.60	.....	.60	.60	.60	.....
Manhattan Supply Co., New York, N. Y	.11	.35	.40	.45	.....	.....	.....	.....	.....	.....
Columbia Rubber Works Co., New York, N. Y	*.11 1/10	*.14 1/10	*.15½	*.19	.....	.....	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	*.30	*.30	*.30	*.30	*.30	*.20
Wm. Bowles, Philadelphia, Pa	.70	.80	.90	1.00	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	51	52	53	54	55	56	57	58	59	60
Easton & Rupp, Washington, D. C	$0.28 .24	.....	$0.60	.....	$0.60	$0.60	.....	$0.48	$0.37 .48	$0.49 .48
Fred. A. Schmidt, Washington, D. C	.....	.....	.70	$0.70	.70	.70	.....	.....	.....	.....
R. Carter Ballantyne, Washington, D. C	.....	.....	.67½	.67½	.67½	.67½	.....	.74½	.47½	.54
C. S. Braisted, New York, N. Y	*.25	*$0.36 5/10	*.50	*.50	*.50	*.50	*$0.36	*.32	*.25	*.25

Bidder.	Items.									
	61	62	63	64	65	66	67	68	69	70
Easton & Rupp, Washington, D. C	$0.61 .48	$0.48	$0.16 .25	.....	.....	.....	$0.30	$0.70	$0.38	$0.72
Fred. A. Schmidt, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.70	.38	.....
R. Carter Ballantyne, Washington, D. C	.47½	.67½	.....	.....	$0.16	.....	.....	*.70	*.38	*.65½
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.85	.46	.70
Manhattan Supply Co., New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.84	.44	.73
C. S. Braisted, New York, N. Y	*.25	*.25	*19	*$0.30	*.33	*$0.40	*.25	.....	.....	.....

Bidder.	Items.									
	71	72	73	74	75	76	77	78	79	80
Easton & Rupp, Washington, D. C	$0.76	$0.76	$0.76	$0.76	$0.76	$0.55	*$0.68	$0.68	*$0.48	$0.38
R. Carter Ballantyne, Washington, D. C	.76	.76	.76	.76	.76	*.54	.68	*.68	.68	*.36
Wm. H. Teepe, Washington, D. C	.75	.75	.75	.75	.75	.63	.75	.75	.75	.45
Manhattan Supply Co., New York, N. Y	*.74	*.74	*.74	*.74	*.74	.60	.70	.70	.70	.42

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	81	82	83	84	85	86	87	88	89	90
Easton & Rupp, Washington, D. C	*$0.32	*$0.39	*$0.36	*$0.48	$0.48	$0.48	$1.05	$0.65	$0.65	$0.35
R. Carter Ballantyne, Washington, D. C	.33	.39	.36	.49	*.47	*.47	*.95	.76	.76	.....
Wm. H. Teepe, Washington, D. C	.38	.45	.41	.57	.....	.....	1.05	*.63	*.63	.50
Manhattan Supply Co., New York, N. Y	.35	.40	.37	.50	.56	.55	1.10	.75	.75	.40
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.....	.....	*.27

Bidder.	Items.									
	91	92	93	94	95	96	97	98	99	100
Easton & Rupp, Washington, D. C	*$0.83	*$0.83	$0.40	$0.62	$1.54	$0.36	*$0.50	$0.48	*$0.26	$0.48
R. Carter Ballantyne, Washington, D. C	.42	.61	*.38	*.59½	*.11¾	*.34	.56	.49	.32	.49
Manhattan Supply Co., New York, N. Y	.33	.33	.44	.64	1.44	.40	.64	*.47	.33	*.33
Frank W. McNeal, New York, N. Y	.39	.59	.....	.....	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	101	102	103	104	105	106	107	108	109	110
Easton & Rupp, Washington, D. C	*$0.30	*$1.25	*$0.92	*$0.27	$1.50	*$7.25 7.60	*$0.01	.....	$0.09	$0.75
R. Carter Ballantyne, Washington, D. C	.31	1.30	1.23	.29	.....	10.29 7.59	.01 1/10	.....	.....	.82½
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	8.50	.....	$0.06¼	.....	.....
Manhattan Supply Co., New York, N. Y	.33	*1.20	92	.38	*1.20	10.00	.06¼	.07	.14	.85
John C. Parker, Washington, D. C	.....	.....	.....	.....	1.40	.....	.....	*.05½ .05½ .06 .05¾ .05½	.....	.....
Rockwell & Rupel Co., Chicago, Ill	.....	.....	.....	.....	2.00	.....	.....	.....	.....	.50
Wyckoff, Seamans & Benedict, New York, N. Y	.....	.....	.....	.....	1.50	.....	.....	.....	.....	1.50
Geo. F. Muth & Co., Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	.....	*.30
Mackall Bros. & Fleenor, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.06¼ .04 .04¼ .04¼	.....	.....
Herman Baumgarten, Washington, D. C	.....	.....	.....	.....	1.50 1.75 2.25 1.25	.....	.....	.....	.....	.75
Shoemaker & Busch, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.03½	*.06½	.36
Wm. Bowles, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.25

*Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	111	112	113	114	115	116	117	118	119	120
Easton & Rupp, Washington, D. C	.....	.....	$0.55 .65 .75	$0.22	$0.27	$0.32	*$0.40	*$0.45	$1.25	$0.35
R. Carter Ballantyne, Washington, D. C	.....	.....	.63 .69 .76	.28	.31	.34	.....	.....	.....	.35½
J. H. Chesley & Co., Washington, D. C	.....	$0.06	.....	.....	.....	.....	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C	.....	.....	1.00	.....	.....	.....	.....	.....	.....	.35
Manhattan Supply Co., New York, N. Y	$1.80	.08	.74	.28	.30	.34	.65	.45	*.50	.40
Columbia Rubber Works Co., New York, N. Y	.....	.....	*.54 .59 .65	.....	.....	.....	.....	.....	.....	.....
Wyckoff, Seamans & Benedict, New York, N. Y	2.00	.16	.....	.....	.....	.....	.....	.....	.....	.....
Geo. F. Muth & Co., Washington, D. C	*1.18	*.05	.....	.....	.....	.....	.....	.....	.....	*.25
H. Hoffa, Washington, D. C	1.15	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	*.20	*.24	*.29	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	.....	.06½	.....	.....	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	121	122	123	124	125	126	127	128	129	130
Easton & Rupp, Washington, D. C	$0.02½ .02½ *.02	$0.06 .06 *.05	*$0.07	$0.05	$0.07	$0.02½	$0.02½ *.02½	*$0.06	*$0.03½ .12	$1.00
Fred. A. Schmidt, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	.12	.....
R. Carter Ballantyne, Washington, D. C	.03	.07½	.07½	.04	*.06½	.02	.....	.....	.....	*1.50
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.50
Manhattan Supply Co., New York, N. Y	.02	.05	.06	.03	.08	.03	.03	.12	.12	2.20
C. S. Braisted, New York, N. Y	.01 5/10	.04 5/10	.04 5/10	*.02 5/10	.....	*.01 5/10	.03	.....	.3 1/10 .4 5/10	.....

Bidder.	Items.									
	131	132	133	134	135	136	137	138	139	140
Easton & Rupp, Washington, D. C	$0.10	$0.14	$0.05	$0.04½	$0.03½	$0.08	*$0.05½	*$0.07	.....	$1.30
Fred. A. Schmidt, Washington, D. C	.08½ .10	.10½ .15	.....	.....	.....	.....	.....	.....	.....	.....
R. Carter Ballantyne, Washington, D. C	.11	.15	*.03½	*.02½	*.02½	*.07½	.08	.09½	$1.15½	*.59½
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.12	.08	.09	.25	.....
Manhattan Supply Co., New York, N. Y	.15	.24	.05	.05	.05	.09	.18	.18	*1.12	2.40
Geo. F. Muth & Co., Washington, D. C	.08	.08½	.....	.....	.....	.....	.....	.....	.....	.....
Weil & Taws, Philadelphia, Pa	.10	.15	.....	.....	.....	.....	.....	.....	.....	.....

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	141	142	143	144	145	146	147	148	149	150
Easton & Rupp, Washington, D. C.	.....	$2.50 *3.60	$1.40	$2.15	$0.80	*$0.78	$0.84	$1.10	$1.20	$1.60
R. Carter Ballantyne, Washington, D. C.	$2.19	.67	*.91	*1.29 2.77	*.43½	.81	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C.	2.50	.....	.....	.....	.....	.85	.....	.....	.....	.....
Manhattan Supply Co., New York, N. Y.	*1.80	1.20	1.10	3.40	.55	1.10	*.60	*.60	*.72	*1.32

Bidder.	Items.									
	151	152	153	154	155	156	157	158	159	160
Easton & Rupp, Washington, D. C.	$2.00	.....	*$4.00	$3.50	*$2.00	$3.00	*$5.30	*$6.25	.....	$2.20
R. Carter Ballantyne Washington, D. C.	.....	*$3.95	.....	1.80	.....	*2.52	7.45	.....	.....	*2.11
J. H. Chesley & Co., Washington, D. C.	.....	4.32	.....	.....	.....	.....	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C.	.....	6.00	5.50	2.50	3.00	.....	.....	6.50	*$2.50	.....
Manhattan Supply Co., New York, N. Y.	*1.70	6.00	6.50	2.40	2.20	3.60	6.40	14.50	12.00	2.40
Mackall Bros. & Flemer, Washington, D. C.	.....	.....	.....	.98 *1.40	.....	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	.....	.....	.....	1.35	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	161	162	163	164	165	166	167	168	169	170
Easton & Rupp, Washington, D. C.	$6.50	$0.21	*$0.09	$0.70	.....	$0.40	$0.14	$0.20	$0.38	$0.75
Fred. A. Schmidt, Washington, D. C.	.....	.....	.....	.....	$0.55 2.00	.....	.....	.....	.....	.....
R. Carter Ballantyne, Washington, D. C.	.....	.....	.10	*.51	1.97	.36½	.12½ .16½ .22	.....	.....	.....
Wm. H. Teepe, Washington, D. C.	.....	.25	.....	.....	*.50	.38	*.13	*.17½	.37½	*.70
Manhattan Supply Co., New York, N. Y.	*5.00	*.20 7/10	.25	.72	1.90	.24	.20	.20	.40	.85
Shoemaker & Busch, Philadelphia, Pa	.....	.....	.....	.....	.....	*.13½	.09½	.12½	*.07½	.....

Bidder.	Items.									
	171	172	173	174	175	176	177	178	179	180
Easton & Rupp, Washington, D. C.	*$0.18	*$0.12	.....	.....	.....	.....	.....	.....	$0.70	.....
R. Carter Ballantyne, Washington, D. C.	.....	.....	.....	.....	.....	.....	.....	.....	*.27½	.....
J. H. Chesley & Co., Washington, D. C.	.....	.....	$0.39	.....	.....	$0.60	*$0.29	$0.14	.....	*$3.60
Wm. H. Teepe, Washington, D. C.	.....	.....	.....	.....	.....	*.55	.....	.....	.40	.....
Manhattan Supply Co., New York, N. Y.	.20	.12	.....	.....	$1.60	.95	1.20	.11	.32	4.70
Geo. F. Muth & Co., Washington, D. C.	.....	.....	.....	.....	.....	.56	.....	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C.	.....	.....	.75 .45	$0.06	*.55	.58	*.28	*.07 .12½ .14½	.....	.....
Shoemaker & Busch, Philadelphia, Pa	.....	.....	*.84½	*.05½	.60	.59	.29	.12½	.....	.....

*Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	181	182	183	184	185	186	187	188	189	190
Easton & Rupp, Washington, D. C			*$5.90	*$1.22	$1.80	*$1.12	$1.60 1.35	$2.50	$2.25	$3.75
R. Carter Ballantyne, Washington, D. C	$7.24		3.60							
J. H. Chesley & Co., Washington, D. C	*5.40	*$9.88								
Wm. H. Teepe, Washington, D. C				1.30		1.20		*2.25	*2.12	
Manhattan Supply Co., New York, N. Y	7.20	12.60	3.90	1.10	1.60	.99	1.40	3.90	3.90	5.40
Wyckoff, Seamans & Benedict, New York, N. Y					*1.15		*1.00			
Geo. F. Muth & Co., Washington, D. C										2.75
H. Hoffa, Washington, D. C										5.00
Mackall Bros. & Flemer, Washington, D. C										3.60 4.70 7.50
S. H. Mann, Philadelphia, Pa				.90	1.20	.78	1.00			
Shoemaker & Busch, Philadelphia, Pa										*3.45

Bidder.	Items.									
	191	192	193	194	195	196	197	198	199	200
Easton & Rupp, Washington, D. C			$4.00							
Fred. A. Schmidt, Washington, D. C										*$0.24
J. H. Chesley & Co., Washington, D. C	$0.72									
Wm. H. Teepe, Washington, D. C	.40	$1.80	3.10							
Manhattan Supply Co., New York, N. Y	1.20	1.84	2.73							
Z. D. Gilman, Washington, D. C				$2.00	$1.80	$2.58		$0.12		
Geo. F. Muth & Co., Washington, D. C						*2.45	*$0.28	*.10		.25
Rufus P. Clarke, Washington, D. C			*2.20 2.90 2.25 3.00 3.25 3.30 3.35							
Mackall Bros. & Flemer, Washington, D. C	.39 *.36	*1.54½								
Bush & Co., Philadelphia, Pa	†.03¾	.90								
Shoemaker & Busch, Philadelphia, Pa	.40	1.59 .75		*.96	*.96	2.46	.34	.18		
Geo. Meier & Co., New York, N. Y									*$4.00	
Thos. Kelly, New York, N. Y			2.90							

* Contract awarded.

† Per pound.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	201	202	203	204	205	206	207	208	209	210
Fred. A. Schmidt, Washington, D. C										$0.08
J. H. Chesley & Co., Washington, D. C			* $1.32							
Z. D. Gilman, Washington, D. C		$0.22		$0.40	$1.00		$0.39		$1.20	† .08½
Geo. F. Muth & Co., Washington, D. C	* $0.10	.25	1.40	.30	.50			* $0.22	* .60	.07½
Mackall Bros. & Flemer, Washington, D. C		* .18		* .24			* .17			.07½
Shoemaker & Busch, Philadelphia, Pa		.19½	1.58	.29½	.48		.18	.24	.64	* .07½
Geo. Helmuth, New York, N. Y				.32	* 3.50	(‡)				
Geo. Meier & Co., New York, N. Y				.25		(§)				
Wm. Bowles, Philadelphia, Pa								.45	.75	.15

Bidder.	Items.									
	211	212	213	214	215	216	217	218	219	220
Z. D. Gilman, Washington, D. C	$0.10	$0.06½	$0.06	$0.15	$0.38	$0.10	$6.00	$0.20		$0.02
Geo. F. Muth & Co., Washington, D. C		* .05½	.03½	.07	* .30			.15		.00 9/10
Mackall Bros. & Flemer, Washington, D. C			.03½	.07						* .00 19/20
Shoemaker & Busch, Philadelphia, Pa	* .06	* .05½	.03½	* .06	.32	* .06	* 3.00	.09		.00 1/10
Geo. Helmuth, New York, N. Y									$1.50	
Geo. Meier & Co., New York, N. Y			* .03	.15			6.00	* .75	* 1.25	

Bidder.	Items.									
	221	222	223	224	225	226	227	228	229	230
J. H. Chesley & Co., Washington, D. C					$0.47			* $4.92	* $4.32	* $4.56
Manhattan Supply Co., New York, N. Y			$0.02 9/10							
John B. Daish, Washington, D. C			.08							
H. Hoffa, Washington, D. C						* $0.50		14.40	12.15	13.12
Rufus P. Clarke, Washington, D. C		* $0.16½	* .02½ .02½ .02½ .03 .03½	* $0.11						
Shoemaker & Busch, Philadelphia, Pa					* .24	.58				
Thos. Kelly, New York, N. Y			.02½							
Wm. Bowles, Philadelphia, Pa					.72					

Bidder.	Items.									
	231	232	233	234	235	236	237	238	239	240
J. H. Chesley & Co., Washington, D. C	* $0.30		* $0.62			* $0.31	* $0.31	* $0.04½	* $0.04	
Peter Adams Paper Co., New York, N. Y										* $0.15
H. Hoffa, Washington, D. C	40					.40	.40			
Geo. Meier & Co., New York, N. Y			.75	* $0.16	* $1.60					
Wm. Bowles, Philadelphia, Pa		* $3.50								
Jessup & Moore Paper Co., New York, N. Y										.09

* Contract awarded. † Per pound.

‡ $1, $5. $0.60, $1, $1.50, $2, $1.75, $3.50, $2.50, $1.25, $2.50, $2, $0.00, $0.75, $0.50, $1.50, $2.50, $0.75, $0.50, $2, $0.75, $1.50, $0.25.

§ Bid of Mier & Co.: $0.75, $0.40, $0.65, $1, $1.75, $0.30, $0.75, $1.75, $0.40, $0.45, $1.75, $1.35, $1.75, $1, $4.50, *$0.00, $0.95, $1.75, $3.50, $1.50, $2.25, $1, $0.25.*

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	241	242	243	244	245	246	247	248	249	250
Easton & Rupp, Washington, D. C	*$0.72		$1.10						$7.58	
Fred. A. Schmidt, Washington, D. C			1.00 *1.05						*7.50	
Peter Adams Paper Co., New York, N. Y		*$0.18		*$0.16						
Geo. F. Muth & Co., Washington D. C			1.25						7.60	
H. Hoffa, Washington, D.C						*$1.99	*$3.50	*$2.50		
Weil & Taws, Philadelphia, Pa			1.20						7.75	
Geo. Meier & Co., New York, N. Y			1.50							
Jessup & Moore Paper Co., New York, N. Y		.12								

Bidder.	Items.									
	251	252	253	254	255	256	257	258	259	260
Easton & Rupp, Washington, D. C				*$0.14						$2.00
Fred. A. Schmidt, Washington, D. C				.15						
Geo. F. Muth & Co., Washington, D. C				.15						*1.50
H. Hoffa, Washington, D. C		*$9.00	$20.00		*$12.00	*$12.00	*$12.00	*$12.00	*$12.00	
Ernest Kubel, Washington, D. C			*18.00							
Weil & Taws, Philadelphia, Pa				.18						
Shoemaker & Busch, Philadelphia, Pa	*$2.37									
Geo. Meier & Co., New York, N. Y										1.92

Bidder.	Items.									
	261	262	263	264	265	266	267	268	269	270
Easton & Rupp, Washington, D. C				$2.25		$2.25	$6.65	$4.98	$1.95	$4.10
Fred. A. Schmidt, Washington, D. C				*1.50 2.00	*$5.58	*1.50 2.00	8.00	5.00	*1.60	*2.05
Wm. H. Teepe, Washington, D. C						2.50				
Geo. F. Muth & Co., Washington, D. C		*$0.75		1.85	9.00	1.85	*7.97	*4.95	1.60	2.85
H. Hoffa, Washington, D.C	*$2.40									
Weil & Taws, Philadelphia, Pa				2.25		2.25	7.50	6.00	2.00	3.30
Geo. Meier & Co., New York, N. Y			*$0.50							

Bidder.	Items.									
	271	272	273	274	275	276	277	278	279	280
Easton & Rupp, Washington, D. C		$2.50	$2.50							
Fred. A. Schmidt, Washington, D. C		*2.44	*2.44							
J. H. Cheeley & Co., Washington, D. C				$0.38						
Geo. F. Muth & Co., Washington, D. C				.15						
H. Hoffa, Washington, D. C					*$1.50	*$1.50	*$1.50	*$1.50		
Ernest Kubel, Washington, D. C					2.50	2.50	2.50	2.50	*$3.50	*$2.50
Shoemaker & Busch, Philadelphia, Pa				*.06						
Geo. Meier & Co., New York, N. Y	*$2.50	3.00	3.00							

*Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	281	282	283	284	285	286	287	288	289	290
Easton & Rupp, Washington, D. C.						$0.30			$0.28	$0.18
Fred. A. Schmidt, Washington, D. C.					*$0.48	*.27 / .31	*$0.95		.23	.18
Geo. F. Muth & Co., Washington, D. C.					.70		1.15		*.20	*.15
H. Hoffa, Washington, D. C.								*$12.00		
Ernest Kubel, Washington, D. C.	*$2.50	*$2.50	*$6.00	*$78.00						
C. S. Braisted, New York, N. Y.						15				
Weil & Taws, Philadelphia, Pa.									.60	.50

Bidder.	Items.									
	291	292	293	294	295	296	297	298	299	300
Easton & Rupp, Washington, D. C.		$0.81	$0.81	$0.81	$0.81	$0.81	$0.81	*$0.05	$0.05	*$0.90
Fred. A. Schmidt, Washington, D. C.		.80	.80	.80	.80	.80	.80			
R. Carter Ballantyne, Washington, D. C.		.67½	.67½	.67½	.67½	.67½	.67½	1.35 / 1.40	3.40 / 3.60	
Wm. H. Teepe, Washington, D. C.								2.00	*4.50	1.35
Manhattan Supply Co., New York, N. Y.								.05	.05	
Wyckoff, Seamans & Benedict, New York, N. Y.										.78 / 1.20
Geo. F. Muth & Co., Washington, D. C.		.80	.80	.80	.80	.80	.80			
C. S. Braisted, New York, N. Y.		.27	.50	.50	.50	.50	.50			
Weil & Taws, Philadelphia, Pa.		*.79	*.79	*.79	*.79	*.79	*.79			

Bidder.	Items.									
	301	302	303	304	305	306	307	308	309	310
Easton & Rupp, Washington, D. C.	$4.80 / *4.50	*$11.75 / 4.50	$0.46	$0.46	$0.46	$0.42	$0.42	$0.42	$0.42	
R. Carter Ballantyne, Washington, D. C.			.44½	.44½	.44½	.47½	.54	.47½	.67½	
Wm. H. Teepe, Washington, D. C.			.60	.60	.60					
Manhattan Supply Co., New York, N. Y.	6.00	11.00								
Wyckoff, Seamans & Benedict, New York, N. Y.	5.00	5.00								
C. S. Braisted, New York, N. Y.			*.30	*.30	*.30	*.25	*.25	*.25	*.25	*$0.33
Herman Baumgarten, Washington, D. C.	3.25 / 3.75	3.25 / 3.75								

Bidder.	Items.									
	311	312	313	314	315	316	317	318	319	320
Easton & Rupp, Washington, D. C.	*$0.70	*$0.38	$0.72	$0.76	$0.76	$0.76	$0.76	*$0.68	*$0.48	*$0.68
Fred. A. Schmidt, Washington, D. C.	.70	.39½								
R. Carter Ballantyne, Washington, D. C.	.70	.38	.65½	.76	.76	76		.68	.68	
Wm. H. Teepe, Washington, D. C.	.85	.46	*.70	*.75	*.75	*.75	*.75	.75	.75	.75

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	321	322	323	324	325	326	327	328	329	330
Easton & Rupp, Washington, D. C	* $0. 68	* $0. 68	* $0. 50	* $0. 37	* $0. 48	* $0 38	* $0. 42	* $0. 13	* $1. 50	$0. 02
R. Carter Ballantyne, Washington, D. C	.....	.....	.....	.36	.....	.36	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C	.75	.75	.....	.....	.....	.45	.....	.....	.....	*. 01½
Manhattan Supply Co., New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.....	.01½	.....
Wyckoff, Seamans & Benedict, New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.....	.01½	.....
Herman Baumgarten, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	.01½	.....

Bidder.	Items.									
	331	332	333	334	335	336	337	338	339	340
Easton & Rupp, Washington, D. C	* $0 01	$0. 07	$ 0. 27	$0. 32	$ 0. 05	* $0. 03½	* $0. 08	* $0. 09	.....	$0. 21
R. Carter Ballantyne, Washington, D. C	.01 1/10	.17	.31	.34	.....	.....	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C	.....	.20	.....	.....	.....	.....	.12	.11	$0. 10	.25
Manhattan Supply Co., New York, N. Y	.....	.08	.....	.....	*. 05	.05	.10	.21	.....	*. 20 7/10
Wyckoff, Seamans & Benedict, New York, N. Y	.....	.13	.....	.....	.....	.....	.....	.....	.....	.....
Geo. F Muth & Co., Washington, D. C	.....	*. 05	.....	.....	.....	.....	.....	.....	.....	.....
C. S. Braisted, New York, N Y	.....	.....	*. 24	*. 29	.....	.....	.....	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	*. 05½	.....
Herman Baumgarten, Washington, D. C	.....	.06¼	.....	.....	.....	.....	.....	.....	.....	.....
Bush & Co., Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.....	5 5/10	.....
Shoemaker & Busch, Philadelphia, Pa	.....	.05½	.....	.....	.....	.....	.....	.....	.07	.34
Wm. Bowles, Philadelphia, Pa	.....	.12	.....	.....	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	341	342	343	344	345	346	347	348	349	350
Easton & Rupp, Washington. D. C	* $5. 90	.....	* $3. 30 3. 64	* $1. 85	$1. 48	$1. 86	$1. 88	$0. 94	$1. 35	$0. 44
Wm. H. Teepe, Washington, D. C	.....	$1. 80	.....	3. 20	.....	.....	.....	.....	.....	.....
Columbia Rubber Works Co., New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.....	*. 54 7/10	*. 28½
Wyckoff, Seamans & Benedict, New York, N. Y	.....	.....	.....	.....	*. 99	* 1. 20	* 1. 68	*. 75	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.....	* 1. 54½	.....	.....	.....	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	.....	1. 50½	.....	.....	.....	.....	.....	.....	.....	.....
Wm. Bowles, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.....	2. 50	1. 25

Bidder.	Items.									
	351	352	353	354	355	356	357	358	359	360
Easton & Rupp, Washington, D. C	$0. 29	$0. 09	$0. 10	$0. 28	$0. 32	$0. 35	$0. 25	$0. 25	$0. 25	$0. 25
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.60	.....	.60	.60
Columbia Rubber Works Co., New York, N. Y	*. 15½	*. 05 5/10	*. 07	*. 14 1/10	*. 15½	*. 19	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	.....	.....	*. 30	*. 30	*. 30	*. 30
Wm. Bowles, Philadelphia, Pa	.85	.25	.29	.80	.90	1.00	.....	.....	.....	.....

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	361	362	363	364	365	366	367	368	369	370
Easton & Rupp, Washington, D. C	$0.25						*$0.70	*$0.38	*$0.72	*$0.65
Fred. A. Schmidt, Washington, D. C							.75	.45		
Wm. H. Teepe, Washington, D. C	.60						.80	.50	.75	.70
C. S. Braisted, New York, N. Y	*.30	*$0.30	*$0.25	*$0.36 5/10	*$0.30	*$0.33				

Bidder.	Items.									
	371	372	373	374	375	376	377	378	379	380
Easton & Rupp, Washington, D. C	*$0.55	*$0.38	*$0.37	*$0.48	*$0.48	*$0.65	*$0.65	*$0.76	*$0.33	*$1.50
Wm. H. Teepe, Washington, D. C	.70	.50	.50		.60	.70	.70	.95		
Frank W. McNeal, New York, N. Y									.39	2.00

Bidder.	Items.									
	381	382	383	384	385	386	387	388	389	390
Easton & Rupp, Washington, D. C	*$0.40	*$1.54	*$0.36	*$0.50	*$7.25 9.60	*$0.01		$0.09		*0.55 .65 .75
J. H. Chesley & Co., Washington, D. C									*$1.08	
Wm. H. Teepe, Washington, D. C					9.50	.04	$0.07	.15		1.20
Wyckoff, Seamans & Benedict, New York, N. Y									2.00	
Mackall Bros. & Flemer, Washington, D. C							*.06 2/3 .04 *.04 1/2 .04 1/2			
Shoemaker & Busch, Philadelphia, Pa							.03 1/2	*.08 1/2		

Bidder.	Item.									
	391	392	393	394	395	396	397	398	399	400
Easton & Rupp, Washington, D. C	$0.05	$0.02 1/2	*$1.90	$0.10	$0.14	*$0.04 1/2	*$0.03 1/2	*$0.08	*$0.07	*$0.09
Fred. A. Schmidt, Washington, D. C				*.10 .10	*.12 .15					
Wm. H. Teepe, Washington, D. C			2.50					.15	.15	.20
C. S. Braisted, New York, N. Y	*.02 2/10	*.01 2/10								

Bidder.	Items.										
	401	402	403	404	405	406	407	408	409	410	411
Easton & Rupp, Washington, D. C	*$1.40	*$1.40	*$0.80	*$0.07	*$0.10	*$0.14	*$0.17		*$2.20	*$0.21	
Fred. A. Schmidt, Washington, D. C											*$0.60 2.10
Wm. H. Teepe, Washington, D. C								*$6.00		.30	.75
Shoemaker & Busch, Philadelphia, Pa										.34	

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	412	413	414	415	416	417	418	419	420	421
Easton & Rupp, Washington, D. C	$0.40	$0.14	$0.20	$0.38	$0.85	*$0.18				
J. H. Cheeley & Co., Washington, D. C							$0.39			$0.60
Wm. H. Teepe, Washington, D. C	.40	*.15	*.19	.45	*.75					.75
Z. D. Gilman, Washington, D. C							1.00	$0.25		
Mackall Bros. & Flemer, Washington, D. C							.75 .45	.06	*$0.55	*.58
Shoemaker & Busch, Philadelphia, Pa	*.13½	.9½	.12½	*.7½			*.34½	*.5½	.60	.59

Bidder.	Items.									
	422	423	424	425	426	427	428	429	430	431
Easton & Rupp, Washington, D. C		*$5.90	*$2.62	*$3.00	*$2.50	$3.75			$1.00	*$1.12
J. H. Cheeley & Co., Washington, D. C	$0.14		3.84							
Wm. H. Teepe, Washington, D. C				5.00	4.50		$0.40	$1.80	3.50	1.40
Z. D. Gilman, Washington, D. C	.25					4.00	.60	2.00		
Rufus P. Clarke, Washington, D. C									*2.20 2.90 2.25 3.00 3.25 3.30 3.35	
Mackall Bros. & Flemer, Washington, D. C	*.07 .12½ .14½					3.60 4.70 7.50	.39 *.36	*1.54½		
Bush & Co., Philadelphia, Pa							.48	.90		
Shoemaker & Busch, Philadelphia, Pa	.12½					*3.45	.40	1.59 .75		

* Contract awarded.

SALE OF CONDEMNED VESSELS.

Having been condemned as unfit for further service, the U. S. S. *Swatara* was stricken from the Navy Register July 29, 1896, pursuant to section 2 of the act of August 5, 1882 (22 Stat. L., 296), and, after appraisal and advertisement, was sold at public sale November 2, 1896, in accordance with section 5 of the act of March 3, 1883 (22 Stat. L., 599). The proposals received under the Department's advertisement of August 3, 1896, were as follows:

The Johnson Wrecking Company, San Francisco, Cal	$6,900
Charles Boudron, San Francisco, Cal	5,780
F. P. Johnson, San Francisco, Cal	2,600
H. P. Gray, San Francisco, Cal	2,550

The bid of the Johnson Wrecking Company, being the highest received, was accepted, and the vessel sold to that company. The expense of advertising was $75.86, and the sum covered into the Treasury, under section 3618 of the Revised Statutes, as "Miscellaneous receipts on account of proceeds of public property," was $6,824.14.

The annexed is a copy of the account current rendered to the accounting officers of the Treasury by the Secretary of the Navy:

H. A. Herbert, Secretary of the Navy, in account current with the United States for proceeds of sale of the U. S. ship Swatara, under public advertisement of August 3, 1896, inviting written proposals, and in pursuance of the acts of August 5, 1882 (22 Stats., p. 296), and Mar. 3, 1883 (22 Stats., p. 599).

DR.

November 2, 1896.	Received from Johnson Wrecking Co		$6,900.00
			6,900.00

CR.

November 18, 1896.	By amount—		
	Paid the Times, Vallejo	22.40	
	Paid the Examiner, San Francisco	53.46	
	Covered into the United States Treasury, miscellaneous receipts	6,824.14	
			6,900.00

BENJ. MICOU, *Chief Clerk.*

RECEIPTS FROM SALES OF GOVERNMENT PROPERTY.

Statement of deposits, on account of sales of Government property, Navy Department, from November 1, 1894, to November 1, 1895.

[Compiled in the office of the Auditor for the Navy Department, by direction of the Secretary of the Treasury.]

Date of deposit.	Place where deposited.	By whom deposited.	Nature of property sold.	Amount carried to miscellaneous receipts.	Amount credited to appropriation.	Total amount deposited.
1895.						
Nov. 4	Washington, D. C	Director Nautical Almanac	Publications Nautical Almanac Office		$56.36	$56.36
4	do	Sigsbee, C. D., commander	Nautical books and charts		23.40	23.40
8	do	Lowry, H. B., quartermaster	Condemned marine clothing	$0.35		.35
6	New York	Sigsbee, C. D., commander	Nautical books and charts		140.00	140.00
8	Boston, Mass	Merry, J. F	do		27.00	27.00
12	New York	Sigsbee, C. D., commander	do		123.54	123.54
18	Washington, D. C	Stickney, F. H., disbursing clerk	Condemned matting	3.43		3.43
19	do	Sigsbee, C. D., commander	Nautical books and charts		82.31	82.31
14	Baltimore, Md	Caswell, T. T., pay director	Condemned material		450.25	450.25
22	Philadelphia, Pa	Riggs & Bros	Nautical books and charts		90.00	90.00
30	Washington, D. C	Stickney, F. H., disbursing clerk	Condemned matting	.60		.60
30	Baltimore, Md	Caswell, T. T., pay director	Condemned ordnance material stores	62.90	405.90	468.80
18	St. Louis, Mo	Washington University Co	Publications Nautical Almanac Office		9.00	9.00
Dec. 5	Washington, D. C	Director Nautical Almanac	do		75.15	75.15
9	do	Sigsbee, C. D., commander	Nautical books and charts		84.65	84.65
Nov. 22	do	Lowry, H. B., quartermaster	Condemned marine clothing	13.27		13.27
Dec. 18	do	Frailey, L. A., paymaster	Condemned ordnance material		8.35	8.35
20	do	Lowry, H. B., quartermaster	Condemned Government supplies	.93		.93
1896.						
Jan. 3	do	Sigsbee, C. D., commander	Nautical books and charts		30.03	30.03
7	do	Lowry, H. B., quartermaster	Condemned marine clothing	4.22		4.22
9	do	do	Condemned Government supplies	7.84		7.84
13	Boston, Mass	Hutchinson, C. C	Nautical books and charts		43.06	43.06
13	New Orleans, La	Woodward, Wright & Co	do		8.76	8.76
16	Washington, D. C	Wainright, R	do		39.34	39.34
7	New York	Wilcox, W. B., passed assistant paymaster.	Condemned ordnance material and stores	1,049.14	9,576.30	10,625.44
17	do	Merril's Sons	Nautical books and charts		9.38	9.38
15	San Francisco, Cal	Arnheim, S. S	do		61.75	61.75
21	Washington, D. C	Director Nautical Almanac	Publications Nautical Almanac Office		145.10	145.10
21	Boston, Mass	Thaxter & Sons	Nautical books and charts		82.29	82.29
21	New Orleans, La	Frigerio & Scully	do		16.75	16.75
18	San Francisco, Cal	Dillon & Co	do		48.90	48.90
25	Washington, D. C	Sigsbee, C. D., commander	do		35.66	35.66
22	New Orleans, La	Frigerio, L., widow of	do		3.15	3.15
23	Portland, Me	Seuler, Wm. & Co	do		17.06	17.06
25	New York	Arnold, C. H., lieutenant-commander	do		262.68	262.68

Statement of deposits, on account of sales of Government property, Navy Department, from November 1, 1894, to November 1, 1895—Continued.

Date of deposit.	Place where deposited.	By whom deposited.	Nature of property sold.	Amount carried to miscellaneous receipts.	Amount credited to appropriation.	Total amount deposited.
1896.						
Jan. 17	Baltimore, Md	Goldsborough, W., pay inspector	Nautical books and charts		$111.25	$111.25
28	Washington, D. C	Loomis, J. P., paymaster	Clothing sold to Naval Reserve, New Jersey		4,774.12	4,774.12
31	do	Sigsbee, C. D., commander	Nautical books and charts		27.43	27.43
Feb. 1	New York	Loomis, J. P., paymaster	Clothing sold to State of Illinois		17.81	17.81
12	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		122.73	122.73
Jan. 7	Boston, Mass	Thaxter & Sons	Publications Nautical Almanac Office		26.25	26.25
10	Philadelphia, Pa	Riggs Bros	do		53.10	53.10
1895.						
Dec. 17	San Francisco, Cal	Arnheim, S. S	do		16.50	16.50
1896.						
Jan. 2	do	do	do		15.00	15.00
11	do	Dillon & Co	do		64.05	64.05
Feb. 19	Washington, D. C	Stickney, F. H., disbursing clerk	Condemned matting	$0.61		.61
19	New York	Michael Rupp & Co	Nautical books and charts		197.99	197.99
20	do	Boggs, L. G., paymaster	Condemned boats	479.10		479.10
20	Washington, D. C	Lowry, H. B., quartermaster	Condemned military stores		97.82	97.82
26	New York	Boggs, L. G., paymaster	Rent of Government property	125.00		125.00
29	do	Sigsbee, C. D., commander	Nautical books and charts		264.17	264.17
Mar. 4	Washington, D. C	do	do		215.45	215.45
7	New York	Loomis, J. P., paymaster	Clothing sold to revenue bark *Chase*		53.50	53.50
13	do	do	do		690.14	690.14
17	do	do	Clothing sold to Naval Reserve		144.33	144.33
Feb. 25	do	Wilcox, W. B., passed assistant paymaster.	Condemned lumber	20.00		20.00
Mar. 24	Washington, D. C	Lowry, H. B., quartermaster	Condemned furniture	4.62		4.62
20	do	do	Condemned marine clothing	.80		.80
26	do	Sigsbee, C. D., commander	Nautical books and charts		185.21	185.21
27	do	Lowry, H. B., quartermaster	Condemned harness and mattresses	20.79		20.79
30	New York	Loomis, J. P., paymaster	Clothing sold to State of Connecticut		37.68	37.68
Apr. 1	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		32.54	32.54
2	New York	Loomis, J. P., paymaster	Condemned clothing		334.60	334.60
7	Washington, D. C	Director Nautical Almanac	Publications Nautical Almanac Office		91.10	91.10
7	do	Sigsbee, C. D., commander	Nautical books and charts		23.38	23.38
13	Boston, Mass	Hutchinson, C. P	do		97.38	97.38
16	Baltimore, Md	O'Neal, M. V	do		46.98	46.98
17	New York	Merrill's Sons	do		12.25	12.25
18	New Orleans, La	Frigerio, Louis, widow of	do		8.25	8.25
Feb. 29	New York	Newcomb, S., superintendent	Publications Nautical Almanac Office		38.85	38.85
Mar. 6	San Francisco, Cal	Arnheim, S. S	do		5.10	5.10
Apr. 10	do	do	do		7.50	7.50

	20	New Orleans, La	Frigerio & Scully	Nautical books and charts		11.35	11.35
	16	San Francisco, Cal	Dillon & Co	....do		72.80	72.80
	22	Boston, Mass	Thaxter & Sons	....do		52.75	52.75
	27	Washington, D. C	Sigsbee, C. D., commander	....do		201.89	201.89
	24	New Orleans, La	Woodward, Wright & Co	....do		17.63	17.63
	30	Washington, D. C	Lowry, H. B., quartermaster	Condemned clothing and furniture	22.72		22.72
	28	San Francisco, Cal	Arnheim, S. S	Nautical books and charts		31.10	31.10
May	7	Washington, D. C	Sigsbee, C. D., commander	....do		100.79	100.79
	7	San Francisco, Cal	Skelding, H. T., paymaster	Condemned ordnance material, clothing, and naval stores.	4,555.83	*12,377.87	16,933.70
	8	Philadelphia, Pa	Riggs Bros	Nautical books and charts		76.95	76.95
	14	Baltimore, Md	Caswell, T. T., pay director	Condemned naval stores	46.00		46.00
	15	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		96.86	96.86
	20	Erie, Pa	Ryan, E. D., passed assistant paymaster.	Condemned whaleboat	151.25		151.25
	20	Washington, D. C	Lowry, H. B., quartermaster	Condemned clothing	1.30		1.30
	20	Norfolk, Va	Galt, W. W., paymaster	Condemned ordnance material, clothing, and naval stores.	3,422.74	*1,107.91	4,530.65
	27	Washington, D. C	Lowry, H. B., quartermaster	Condemned furniture	1.97		1.97
	23	Portland, Me	Wm. Senter & Co	Nautical books and charts		10.50	10.50
	28	Baltimore, Md	Goldsborough, W., pay inspector	....do		39.38	39.38
June	2	New York	Loomis, J. P., paymaster	Clothing sold to State of Connecticut		485.46	485.46
	5	....do	....do	Clothing sold to State of Rhode Island		1,196.60	1,196.60
	5	Philadelphia, Pa	Peterson, A., paymaster	Rent from naval wharf	300.00		300.00
	6	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		107.21	107.21
	10	New York	M. Rupp & Co	....do		109.12	109.12
May	2	Portland, Oreg	Rodgers, G. G., assistant paymaster	Condemned naval stores	10.00		10.00
June	18	New York	Sigsbee, C. D., commander	Nautical books and charts		244.34	244.34
May	14	....do	....do	....do		220.00	220.00
June	26	....do	Loomis, J. P., paymaster	Clothing sold to revenue steamer *Johnson*		126.10	126.10
	27	....do	....do	Clothing sold to revenue steamer *Fessenden*		55.50	55.50
	29	Washington, D. C	Stickney, F. H., disbursing clerk	Waste paper	164.26		164.26
	30	....do	Director Nautical Almanac	Publications Nautical Almanac Office		40.95	40.95
July	9	Boston, Mass	Thaxter & Sons	....do		35.70	35.70
	14	Washington, D. C	Frailey, L. A., paymaster	Condemned ordnance material and naval stores	176.79	24,839.20	25,015.99
	16	New York	R. Merril's Sons	Publications Nautical Almanac Office		8.10	8.10
	16	....do	.... do	Nautical books and charts		31.38	31.38
	16	Boston, Mass	Hutchinson, C. P	....do		155.95	155.95
	22	Washington, D. C	Sigsbee, C. D., commander	....do		131.28	131.28
	20	New Orleans, La	Frigerio & Scully	....do		10.95	10.95
	17	San Francisco, Cal	Dillon & Co	Publications Nautical Almanac Office		25.95	25.95
	23	New Orleans, La	Woodward, Wright & Co	Nautical books and charts		4.38	4.38
	24	Boston, Mass	S. Thaxter & Son	....do		116.55	116.55
	20	San Francisco, Cal	Arnheim, S. S	....do		104.50	104.50
	27	Boston, Mass	Beaman, G. W., pay inspector	Condemned naval stores	2,412.61		2,412.61
	29	Baltimore, Md	Caswell, T. T., pay director	Condemned ordnance material		125.62	125.62
	20	San Francisco, Cal	Arnheim, S. S	Publications Nautical Almanac Office		6.50	6.50
	25	....do	Dillon & Co	Nautical books and charts		76.65	76.65
Aug.	3	Washington, D. C	Sigsbee, C. D., commander	....do		157.71	157.71

* Clothing, $2,911.64; ordnance, $9,466.23.

Statement of deposits, on account of sales of Government property, Navy Department, from November 1, 1894, to November 1, 1895—Continued.

Date of deposit.	Place where deposited.	By whom deposited.	Nature of property sold.	Amount carried to miscellaneous receipts.	Amount credited to appropriation.	Total amount deposited.
1896.						
July 27	New Orleans, La	Frigerio, Louis, widow of	Nautical books and charts		$7.45	$7.45
Aug. 2	Philadelphia, Pa	Riggs Bros	Publications Nautical Almanac Office		19.65	19.65
5	do	do	Nautical books and charts		63.47	63.47
7	Washington, D. C	Frailey, L. A., pay inspector	Condemned ordnance material		5,394.41	5,394.41
13	New York	Hendrickson, W. W., professor	Publications Nautical Almanac Office		59.25	59.25
13	do	Sigsbee, C. D., commander	Nautical books and charts		230.85	230.85
15	Newport, R. I	Hobbs, I. G., paymaster	Condemned ordnance material		44.60	44.60
13	Portland, Me	Wm. Senter & Co	Nautical books and charts		15.14	15.14
15	Washington, D. C	Lowry, H. B., quartermaster	Condemned clothing and furniture	$31.35		31.35
18	do	Mahan, D. H., lieutenant	Nautical books and charts		222.98	222.98
18	New York	Loomis, J. P., paymaster	Clothing sold to Naval Reserve, New York		224.80	224.80
20	do	Boggs, L. G., paymaster	Rent of Government property	125.00		125.00
22	do	Loomis, J. P., paymaster	Clothing sold to revenue steamer *Johnson*		38.86	38.86
28	Washington, D. C	Lowry, H. B., quartermaster	Condemned marine clothing	5.88		5.88
28	do	Director of Nautical Almanac	Publications Nautical Almanac Office		275.55	275.55
24	San Francisco, Cal	Arnheim, S. S	do		7.00	7.00
Sept. 14	Baltimore, Md	Caswell, T. T., pay director	Clothing sold to naval cadets		340.77	340.77
16	Washington, D. C	Lowry, H. B., quartermaster	Cartridge shells	19.80		19.80
21	do	do	Copper boilers	.20		.20
22	New York	Boggs, L. G., paymaster	Old caisson, granite dry dock	249.50		249.50
25	Washington, D. C	Lowry, H. B., quartermaster	Condemned marine stores	1.27		1.27
25	New York	Hendrickson, W. W., professor	Publications Nautical Almanac Office		28.50	28.50
25	do	Sigsbee, C. D., commander	Nautical books and charts		30.34	30.34
28	Washington, D. C	do	do		143.54	143.54
30	do	do	do		174.45	174.45
Oct. 2	do	Lowry, H. B., quartermaster	Condemned marine clothing	33.35		33.35
6	do	do	do	31.60		31.60
9	Baltimore, Md	O'Neal, M. V	Nautical books and charts		49.13	49.13
8	Boston, Mass	S. Thaxter & Son	do		70.03	70.03
8	New Orleans, La	L. Frigerio, widow of	do		3.40	3.40
6	San Francisco, Cal	Arnheim, S. S	Publications Nautical Almanac Office		6.00	6.00
7	do	do	do		15.00	15.00
8	do	do	Nautical books and charts		95.55	95.55
13	Washington, D. C	Sigsbee, C. D., commander	do		160.28	160.28
13	do	Lowry, H. B., quartermaster	Condemned furniture	.20		.20
13	San Francisco, Cal	Arnheim, S. S	Publications Nautical Almanac Office		15.00	15.00
14	New Orleans, La	Woodward, Wright & Co	Nautical books and charts		12.45	12.45
15	do	Frigerio & Scully	do		12.25	12.25
20	Washington, D. C	Frailey, L. A., pay inspector	Condemned naval stores	150.44		150.44
22	do	Lowry, H. B., quartermaster	Condemned marine clothing	8.82		8.82

21	San Francisco, Cal.	Dillon & Co.	do			75.35	75.35
27	New York	Boggs, L. G., paymaster	Condemned scrap steel		1,151.63		1,151.63
26	do	Kenny, A. S., pay inspector	Clothing sold to revenue steamer *Covington*			110.23	110.23
31	Washington, D. C.	Sigsbee, C. D., commander	Nautical books and charts			119.91	119.91
	Total				14,868.11	70,531.25	85,399.36

* Clothing, $763.07; ordnance material, $344.84.

REPORT

OF THE

JUDGE-ADVOCATE-GENERAL OF THE NAVY.

NAVY DEPARTMENT,
OFFICE OF THE JUDGE-ADVOCATE-GENERAL,
Washington, October 1, 1896.

SIR: In compliance with the Department's order of the 8th of July st, I have the honor to submit herewith a report of the operations of is office for the fiscal year ending June 30, 1896.

The annual increase in the volume of business transacted, observed ring the past several years, has continued. This increase, which has en constant and almost uniform from year to year, is due in part rectly to the work connected with the construction of new vessels, d in part to the natural increase of business incident to the placing commission during recent years of additional ships as they have en successively completed.

Notwithstanding the continued increase in the business of the office, wever, the work has not been allowed to lag or fall in arrears, and I ke pleasure in reporting that at this time it has been brought up to te. This has not been accomplished without difficulty, in view of the nited clerical force available, and the task has required the diligent, remitting, and zealous attention of every officer and clerk in the fice.

In addition to the duties heretofore assigned to the Judge-Advocate-neral, the new Navy Regulations now in course of publication make it s duty "to examine all contracts, and the bonds accompanying them, ade by any of the bureaus for buildings or other public works, as to e form and validity of the same;" and also require that "all proposed anges in or amendments to the Navy Regulations, accompanied by a ll statement of the reasons for the proposed change or amendment, d the effect that would be produced thereby, be submitted to the epartment and referred to the Judge-Advocate-General, who will port thereon to the Secretary of the Navy."

DESERTION CASES—EXTENSION OF PROVISIONS OF ACT OF AUGUST 14, 1888.

In the spring of 1865 a very considerable number of soldiers and ilors who had served faithfully during the activities of the war, con-lering that their duties were practically over, left for their homes thout obtaining formal discharge. Upon making application, in later ars, for pension, or upon seeking admission to military organizations societies, such men were often greatly surprised to find the mark of sertion standing against their names, when as a matter of fact they

were well aware that they had served creditably during the whole or a considerable portion of the war. In view of the fact that while nominally deserters the men referred to had, as a class, rendered faithful and patriotic service, Congress passed certain enactments for their relief. The act relating to the Navy was entitled "An act for the relief of certain appointed and enlisted men of the Navy and Marine Corps from the charge of desertion," and was approved August 14, 1888. This act, among other things, authorized the Secretary of the Navy, in his discretion, to remove the charge of desertion in cases where it appeared that the applicant had not left the Navy before May 1, 1865, and had faithfully rendered service for a period of at least six months prior to that date. The time within which applications for relief under this act could be received and acted upon was, however, limited to five years from the date of its approval, and accordingly expired in consequence of such limitation August 14, 1893.

Doubtless at the time the act of August 14, 1888, was passed, it was supposed that all deserving applicants for relief could and would present their claims within the prescribed limit of five years. This expectation was not realized, however, and since the provisions of the act expired a considerable number of applications have been filed by men whose cases appear to be meritorious and in all respects similar to those of persons who had been granted relief during the life of the act, but in consequence of the fact that such applications were received too late they could not be considered.

While the number of applicants who would become entitled to relief if the limitation were removed is not very great, there appears to be no equitable reason for their exclusion. During the last Congress a bill (H. R. 5841) "to amend section 5 of the 'act for the relief of certain appointed and enlisted men of the Navy and Marine Corps from the charge of desertion,' approved August 14, 1888," was introduced and referred by the Committee on Naval Affairs to this Department for report. Inasmuch as this bill simply provided that the act of 1888 be so amended as to remove the limitation of time within which applications for relief thereunder might be received, the Department recommended the bill to the favorable consideration of the committee. It did not, however, become a law.

In this connection attention is invited to the fact that by the act of March 2, 1895, all limitations of time within which applications for relief may be received and acted upon under section 9 of the "act for the relief of certain volunteer and regular soldiers of the late war and the war with Mexico," approved March 2, 1889, are removed. The reason which prompted the Congress to enact this legislation with respect to the Army seem to apply with equal force to the Navy, and it is desirable and proper that the statutes relating respectively to the military and to the naval service should in matters of this character be made uniform. I have the honor, therefore, to recommend that attention be again invited to this subject, with a view to the enactment of such legislation as will extend to men who served faithfully in the Navy until the close of the war the privileges respecting the removal from their records of the merely technical charge of desertion which they would enjoy had they rendered like service in the Army.

SCHEDULE OF PUNISHMENTS.

It having been provided by special act of Congress that whenever, by any of the articles for the government of the Navy of the United *States, punishment on* conviction of an offense is left to the discretion

of a court-martial, such punishment shall not, in time of peace, be in excess of a limit to be prescribed by the President, a schedule was prepared, approved by the President, and duly promulgated to the service in General Order No. 459, dated May 25, 1896, establishing limitations to the punishments to be imposed upon officers and enlisted men by general courts-martial. The provisions of this general order did not go into effect until sixty days after its date, and have, therefore, been in operation too short a time to justify an expression of opinion, based upon experience, respecting their practical value; but no doubt is entertained that their continued application will tend to render more uniform and equitable the punishments imposed by general courts for like offenses, and that in this respect particularly their operation will prove beneficial to the service.

DEPOSITIONS.

The power to convene naval general courts-martial is by law vested in the President, the Secretary of the Navy, or the commander in chief of a fleet or squadron, and it is, in addition, explicitly provided that "no commander of a fleet or squadron in the waters of the United States shall convene such court without express permission from the President." Upon the commission by any person in the naval service of an offense grave enough to warrant trial by general court-martial, the matter is at first made the subject of official report to the commander in chief of the squadron or to the Secretary of the Navy, as the case may be; the circumstances under which the offense was committed are then carefully considered and such investigation entered upon as may be necessary; and, finally, if the case is deemed sufficiently serious, charges and specifications are formulated and a court convened. In practice a considerable time elapses, as a rule, between the commission of an offense and the conviction or acquittal of the person accused, inasmuch as protracted correspondence is often necessary in order to satisfy the convening authority as to whether or not a court should be ordered. In the meantime witnesses having knowledge of facts important to the prosecution or defense may, through exigencies of the service, be widely scattered, and in such cases it is frequently very difficult and occasions great inconvenience and expense to obtain the attendance of witnesses without whose presence in court the interests of the accused or those of the service will materially suffer.

The facts necessary to establish before a naval court-martial the guilt or innocence of the accused usually rest within the knowledge of officers and men in the Navy, a peculiar class of witnesses, having, as a rule, no fixed or permanent station and liable to be ordered to remote duty at any moment; and it is to be observed that the evidence of this class of witnesses, in consequence of the responsibility growing out of their continued connection with the naval service, would, when given by deposition, undoubtedly be more than ordinarily credible.

The considerations above indicated, together with others discussed in a former report, lead me to believe that the enactment, with reference to the Navy, of a clause similar to that which is now in force with respect to the Army would promote the efficient administration of justice by naval courts.

The existing provision of law referred to is embodied in article 91 of the Articles of War, and provides that—

> The depositions of witnesses residing beyond the limits of the State, Territory, or District in which any military court may be ordered to sit, if taken on reasonable

notice to the opposite party and duly authenticated, may be read in evidence before such court in cases not capital.

The draft of a provision of law on this subject, which received the Department's approval, and was embodied in a bill (H. R. 4319) introduced in the House of Representatives January 17, 1896, by Mr. Hilborn, and still pending, is as follows:

The depositions of witnesses stationed or residing at such a distance from the place where a naval court is held, or who are under orders and about to go to such a distance that it is not, in the judgment of such court, practicable to secure their personal attendance without incurring unreasonable expense and loss of time, if taken on reasonable notice to the opposite party and duly authenticated, may be put in evidence before such court in cases not capital.

CIVILIAN WITNESSES BEFORE NAVAL COURTS.

The experience of the past year has again shown the desirability of legislation empowering courts-martial to secure the attendance and testimony of civilian witnesses. In several instances during the year naval courts have been embarrassed by their inability to obtain evidence deemed essential to the proper determination of the questions before them, simply because such evidence lay wholly within the knowledge of civilian witnesses who declined to appear. Believing that it could not have been intended to clothe naval courts with jurisdiction over certain classes of offenses and at the same time to deny to such courts the means of obtaining evidence upon which alone in many cases justice may depend, I beg to renew the recommendation set forth in my last annual report, to the effect that Congress be asked to provide, in such manner as in its wisdom may be deemed proper, some means of remedying the apparent defect in the present provisions of law on this subject.

NAVAL EXAMINING AND RETIRING BOARDS.

Another subject with respect to which the statutes relating to the naval service could advantageously be assimilated to those governing the Army is that of examining and retiring boards. The provisions of law now in force in the Army on this subject were drawn after consideration of the statutes relating to the Navy and embody their essential features, while avoiding certain duplications of work, prolixity, and delay which the naval statutes, as they stand, entail. Inasmuch, therefore, as the more businesslike methods of procedure prescribed in the case of the Army were the result, in a large measure, of an intelligent codification of the several statutes enacted from time to time on the subject of the examination and retirement of officers of the Navy, with improvements suggested by their practical application in the latter branch of the service, the recommendation contained in my last annual report, that the benefits of these improved methods be extended to the Navy, is renewed.

EXAMINATION OF PASSED ASSISTANT SURGEONS AND CHIEF ENGINEERS.

In pursuance of the provisions of sections 1493, 1496, and 1497 of the Revised Statutes, all officers of the Navy on the active list are subjected to examinations to determine their mental, moral, and professional qualifications for the performance of all the duties at sea of the grade *to which they* are to be promoted, with the exception of certain officers

of the Medical and Engineer Corps, who receive advancement without being subjected to any examination whatever. Line officers when promoted from the grade of lieutenant-commander to commander, or from the grade of commander to captain, are subjected to examination; but chief engineers when promoted to corresponding relative rank are not examined, and passed assistant surgeons are not required to pass either physical or professional examinations prior to promotion to surgeon.

Inviting attention to the remarks contained in my last annual report on this subject, I have the honor to renew the suggestion therein contained, that such legislation be recommended as may be necessary to correct this apparent omission in the requirements of the statutes relating to promotion and advancement in the Navy.

GROVER ISLAND.

In the year 1799 the United States purchased from Josiah Tatnall a tract of land in Camden County, Ga., described in the deed of conveyance as "Grover Island," and said to contain "350 acres, more or less." Nothing appears upon the records to show the purpose for which this property was bought by the Government, and more than half a century elapsed before it exercised any rights of ownership in the island. In the meantime an attempt was made by a citizen of the State of Georgia to enter the tract under the preemption laws of that State. The claimant having settled upon and improved the property, protracted litigation followed, in the course of which it was developed that while there was no moral doubt of the identity of the tract of land in controversy with Grover Island, as described in the Tatnall deed, it was difficult to obtain legally satisfactory proof of the fact, and the case was continued from term to term during a long period of years.

It seems that the deed conveying this property to the United States contained no more accurate description of it than that afforded by the name and area of the island, and that while the original survey, which it appears was made by George Washington, gave an area substantially corresponding to that named in the deed, subsequent accretions so far changed the outline of the island as to materially increase its area and to render its identification and the determination of the exact rights of the United States under the Tatnall deed a matter of difficulty. Finally, in 1888 a consent verdict was rendered in the case, and the United States was placed in possession of the greater portion of Grover Island, including all of the "hummock land," the claimant retaining the remainder.

After this decision of the matter the island appears to have been again lost sight of by the Government, and inasmuch as it was originally a part of the State of Georgia, and was, therefore, not included in "the public lands," it was not embraced in the list of naval reservations prepared and certified by the Commissioner of the General Land Office. During the past year, however, inquiries were received from several parties who desired to purchase or to enter a tract of public land which they vaguely described as an island lying on the southeast coast of Georgia, and the records relating to Grover Island were again brought to light.

Whether this tract of land was originally purchased on account of the live-oak timber then growing upon it, or for some other reason, the fact remains that the Government has owned the island for nearly one hundred years and has made no use of it whatever, and it does not appear probable that it will ever be of value for any public purpose. No

custodian has been placed in charge of the island, and it is understood that much of the live-oak timber supposed to have been at one time growing upon it has been removed without authority by private parties. Whether this is the case or not, live-oak timber is no longer an important material in naval construction, and the Government has recently restored to the public domain by special act of Congress (the act approved March 2, 1895, 28 Stat. L., p. 814) considerable tracts of land lying in Alabama and Mississippi heretofore held as live-oak timber reservations, but no longer required for such purposes.

It may be further observed that Grover Island lies too far inland and that the waters about it are too shallow to render practicable its use as a naval station or site for a dry dock, and that it does not seem at all probable that it will ever be utilized for any other purpose connected with the wants of the Navy.

Under these circumstances it would seem that this tract of land, which never has been and in all probability never will be of any use to the Government, should be sold or restored to the public domain, in order that private parties desirous of improving it may have an opportunity to obtain legal title thereto, and I have the honor to recommend, accordingly, that Congress be asked to grant the necessary authority for the sale or other suitable disposition of Grover Island.

NAVAL OBSERVATORY LANDS.

Under date of August 1, 1894, the President approved a joint resolution "to establish an observatory circle as a provision for guarding the delicate astronomical instruments at the United States Naval Observatory against smoke or currents of heated air in their neighborhood and undue vibrations from traffic upon the extension of public thoroughfares in their vicinity, and for other purposes." This resolution authorized the Secretary of the Navy to sell certain portions of the old Naval Observatory lands lying without the limits of the circle established by the resolution, and to purchase, either directly or by condemnation, certain lands belonging to private parties lying within the limits of the circle. In pursuance of this authority a board of appraisers, consisting of Hon. John W. Ross, president of the Board of Commissioners of the District of Columbia; Mr. Thomas E. Waggaman, of Washington, and the Superintendent of the Naval Observatory, was appointed to determine and fix the price at which the two tracts of land belonging to the Government, lying outside the limits of the circle, should be sold. The larger of the two tracts referred to was subdivided and duly offered for sale after public advertisement, purchasers being invited at their option to bid on any one or more of the subdivisions or upon the tracts in entirety. No offers to purchase these lands at or above the appraised price were, however, received, with the exception of one offer for a part of the smaller plat, which offer the Department did not deem it expedient to accept.

The board of appraisers was accordingly reconvened, and the question as to whether or not the prices fixed were too high was brought to its attention, and the opinion of the board was requested as to whether or not it would be advantageous to the interests of the Government to reduce the price; and if so, to what extent. After careful reconsideration of the subject, the board unanimously reported that the prices fixed were not too high, but stated that, in its opinion, there was at that time no demand for suburban real estate on the part of investors, and

recommended that action be postponed until such time as there may be an improvement in the real-estate market.

The joint resolution referred to provides that the expenses necessary to be incurred in advertising, etc., should be defrayed from the proceeds of the sale. A sale not having been effected, an estimate covering such expenses was submitted to Congress at its last session, and appropriation therefor was made.

It is recommended that, until some material improvement takes place in the values of suburban property, no further steps be taken to place the Naval Observatory lands upon the market.

NAVAL PRISONS.

An important difference exists between the Army practice and that of the Navy in dealing with enlisted men sentenced to a period of confinement and to dishonorable discharge from the service. Enlisted men of the Army in such cases are first discharged and then confined during the period prescribed by the sentence, while enlisted men of the Navy in like circumstances are retained in the service until the expiration of the period of confinement imposed.

In some respects the Army practice appears to be the better one. It may fairly be presumed that in fixing the number of enlisted men of the Navy Congress did not intend to have included therein naval prisoners under sentence of dishonorable discharge, inasmuch as men belonging to this class are practically severed from and are not allowed to reenter the Navy, and are in no sense a part of its efficient force; yet under the present practice such men are continued on the rolls to the exclusion of active and available men who might promptly take their places if that portion of their sentences involving dishonorable discharge were immediately executed.

There does not appear to be any substantial reason for the difference in practice in this particular between the two branches of the service, unless it be found in the absence of a specific appropriation for the support of prisoners confined at naval prisons and for the maintenance and repair of such prisons. It is true that the naval appropriation act for each fiscal year under the heading "Pay, miscellaneous," contains an appropriation for "Expenses of * * * prisoners and prisons;" but it has not been the practice to draw to any great extent upon that appropriation, the expenses of keeping the prisons in repair having been borne chiefly by the Bureau of Yards and Docks, and the prisoners being dependent for their subsistence upon their ration as commuted.

Direct and specific appropriation sufficient to maintain and keep in repair the naval prisons at Boston and Mare Island and to subsist the prisoners therein confined would not involve any actual increase in the public expenditures for these purposes, and if such appropriation were made sentences requiring dishonorable discharge could be promptly carried into effect and the rolls of enlisted men of the Navy be relieved of persons who, while nominally a part of the enlisted force, contribute nothing to its efficiency.

In view of these considerations I have the honor to recommend that Congress be asked to make the change in the form of appropriation above indicated. It is proper to observe that should this be done provision should be made extending the jurisdiction of naval courts-martial to the trial and punishment of prisoners for offenses committed during the period of their confinement.

With regard to the condition and management of the naval prison

at Boston, Mass., I do not know that I can add anything to what was contained in my last annual report, except to say that having in May last made a thorough inspection of the prison I found its hygienic condition and its general administration and management entirely satisfactory. The overcrowding of the prison, rendering necessary the use of dark cells; the absence of provision for suitable exercise, and the insanitary conditions which were the occasion of some complaint several years ago have been remedied. No complaints respecting the conduct of this institution have been received from any source during the year, and it is believed that all practicable and proper provision has been made for the health and comfort of the inmates of the prison, and, at the same time, new regulations have been promulgated for the purpose of strictly maintaining its character as a penal institution.

While unable on account of the distance to make a personal inspection of the naval prison at Mare Island, Cal., from reports received from the officer in charge of that prison, and the absence of complaints respecting its management, it is believed that that institution is also in a satisfactory condition.

BIENNIAL EXAMINATION OF OFFICIAL BONDS.

In my last annual report attention was invited to the difficulties experienced in carrying out the provision of section 5 of the act making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June 30, 1896, approved March 2, 1895, that—

> Hereafter every officer required by law to take and approve official bonds shall cause the same to be examined at least once every two years for the purpose of ascertaining the sufficiency of the sureties thereon.

It was there pointed out that owing to the decision of the Attorney-General that United States attorneys could not be called upon to make examination and certificate as to the sufficiency of sureties on the bonds of pay officers of the Navy, it was necessary to require the officers to furnish, at their own expense, certificates of United States judges or attorneys, and that when the officers are on foreign stations much delay often occurs in procuring the necessary certificates of sufficiency.

The difficulties herein referred to still exist in this connection, and I have the honor to renew my former recommendation that Congress be requested either to appropriate the moneys required to defray the expenses necessarily incurred in examining bonds of officers of this Department under the method at present employed therefor, or to make it the duty of the United States attorneys to make such examinations upon request of the Secretary of the Navy, they to be allowed a reasonable and proper fee for the performance of such additional service. I am of the opinion that the latter method would be much more practicable and satisfactory.

This matter is further complicated by the fact that the Comptroller of the Treasury in a recent decision has held that, while pay officers are entitled from the appropriation "pay miscellaneous" to the expenses actually incurred by them under orders of the Department in ascertaining the sufficiency of sureties on their bonds, there is no law authorizing a charge against the United States by a United States attorney for a certificate given in his official capacity respecting the sufficiency of the sureties whose names appear upon official bonds.

CERTIFIED CHECKS IN LIEU OF BONDS.

In previous annual reports attention has been invited to the fact that bidders of a very desirable class have been deterred in numerous instances from submitting proposals to furnish naval supplies by the rigid requirements of law, prescribing that such proposals must be accompanied by formally executed guaranties, and that, when contracts are entered into in pursuance thereof, satisfactory bonds must be given. Congress at its last session passed "An act to amend section 3719 of the Revised Statutes, relative to guaranties on proposals for naval supplies," by adding to that section the following clause:

Provided, That the Secretary of the Navy may, in his discretion, accept, in lieu of the written guaranty required to accompany a proposal for naval supplies, and in lieu of the bond required for the faithful performance of a contract for furnishing such supplies, a certified check, payable to the order of the Secretary of the Navy, for the full amount of such proposal or contract, the check to be held by the Secretary of the Navy until the requirements of the proposal or contract shall be complied with and as a guaranty for compliance with the same.

It is believed that the privilege of depositing with the Department certified checks in lieu of bonds will be appreciated by the larger dealers especially, inasmuch as such dealers are, as a rule, unwilling to solicit the favor of personal suretyship or to enter into the elaborate formal obligations necessary to obtain corporations as sureties in cases where small amounts only are involved. At the same time the provision referred to will furnish to the Government an entirely satisfactory form of security for the prompt and faithful fulfillment of contracts covered by such certified checks.

COUNTERFEITING OFFICIAL STAMPS.

It seems desirable that some provision should be made, by amendment of section 5440 of the Revised Statutes, or otherwise, for the punishment of persons found guilty of counterfeiting or fraudulently using inspection checks, marks, or stamps, or of perpetrating or attempting to perpetrate any like fraud upon the Government. It has been held that if two or more persons conspiring together engage in such fraudulent practices they can be punished under the provisions of section 5440, but that the language of that section is not broad enough in its terms to cover such an offense when committed by one person only. In consequence of this defect in the law the Department was in one instance at least unable to secure the prosecution of an offender who, apparently without accomplices, had been guilty of an attempt to make fraudulent use of or to counterfeit the official stamp of an inspecting officer.

The recommendation contained in my last annual report on this subject is respectfully renewed.

ACQUISITION OF PATENT RIGHTS.

The rapid development which has taken place during recent years in naval construction has brought into prominence the question of the relations of the Government to holders of letters patent, and particularly to that class of inventors who are in the public service. A modern vessel of war is a complicated structure, employing in its hull, machinery, equipment, and interior economy devices covering a wide range of invention, and utilizing as a rule the most recent discoveries in heating, ventilating, the handling and disposition of ammunition, stores, and supplies, electric lighting, interior communication, etc. Employees of

the Government, and particularly officers of the Navy, who are interested in such matters naturally become in many instances the inventors of new and valuable devices and improvements, upon which letters patent are issued. It is the policy of the Government to encourage inventors, and the courts have adopted a liberal interpretation of the law in dealing with the rights of the class referred to, having held that officers of the Army and Navy, for example, notwithstanding their connection with the public service, are entitled to the fruits of their inventions, even when of a character useful to the Government alone, provided that the work of inventing and perfecting such devices and improvements has been a matter of personal enterprise and effort. It is otherwise, however, where officers or employees of the Government have been assigned to the duty of devising improvements, and where facilities for conducting experiments with reference thereto have been furnished by the Government.

The adjustment of the rights of inventors who are in the public service, and whose inventions are used by the Government, has been found in practice to be a matter of difficulty. Legislation on the subject has been heretofore recommended, and at least one measure was introduced at the last session of Congress intended to meet the difficulties encountered in this connection. It is recommended that Congress be urged to give consideration to the subject and to enact such legislation as will in effect provide that whenever, in the judgment of the head of any Department of the Government, the public interests will be promoted by the use of any invention or discovery covered by letters patent issued to any person who, at the time of such invention or discovery, was employed by the United States upon work requiring him to perform duties as a consequence of which the invention or discovery was made, or who may be presumed to have made such discovery or invention by reason of knowledge acquired by him in the public service, the right to use the same may be acquired by the Government upon such terms or at such price or rate of compensation as may, by the head of the Department under whose direction the patentee was employed, be deemed just and equitable, subject, if such additional proviso be thought necessary, to appeal to the courts.

INSTRUCTION IN MILITARY LAW.

In my last annual report the suggestion was made that a brief course of instruction in military law be provided at the Naval Academy, and attention was invited to the fact that upon being graduated from the Academy an officer may be called upon at any time to perform the duty of recorder of a summary court-martial, and that early in their career all commissioned officers are subject to service as members or judges-advocate of general courts-martial, a duty upon which they ought not to be required to enter without preliminary instruction.

I do not wish to be understood as advocating the necessity of a thorough course of legal training as a part of the equipment of officers of the Navy. It is by no means necessary that they should undertake exhaustive legal researches; nor is it desirable, except in cases where by reason of individual predilection, or for some special reason, officers may determine to enter this laborious field of study. It is nevertheless true, however, that with the growth of the Navy the importance of an intelligent administration of its jurisprudence increases; and this jurisprudence, in the first instance at least, and subject only to the general *supervision of* the Secretary of the Navy and the President, must be

administered by officers of the Navy. The interests of the service at large, as well as those of the officers and men against whom charges and specifications are preferred, are involved in every trial and affected by the proceedings, findings, and sentence of every naval court. It is most desirable that officers who, when acting as judge-advocate, are charged with the double responsibility of protecting the interests and honor of the accused where no counsel is employed on the one hand, and the discipline and welfare of the service on the other, or who, when sitting as members of a court-martial, act not only as jurors but also as judges, and are not infrequently in the latter capacity called upon to decide difficult and intricate questions of law, should, before undertaking such duties, be equipped at the very least with a general knowledge of the leading principles of naval law and some familiarity with the forms of procedure essential to the administration of justice by naval courts.

While the suggestion, prompted by the considerations above set forth, that the course of study prescribed at the Naval Academy be made to include elementary instruction in military law has not yet been adopted, so far as I am aware, it is gratifying to note that interest in the subject has been manifested by the Naval War College at Newport, and that, at the instance of the president of that institution, an officer on duty in this office, First Lieut. Charles H. Lauchheimer, United States Marine Corps, has recently delivered at the War College a brief course of lectures upon the general subject of naval law and naval courts.

In this connection I take pleasure in inviting attention to a volume of Forms of Procedure for General and Summary Courts-Martial, Courts of Inquiry, Investigations, Naval and Marine Examining and Retiring Boards, by Lieutenant Lauchheimer, which has recently been issued by authority of the Department. This volume was compiled and arranged under my general direction from cases on file in this office, and is intended to present, in compact and accessible shape, forms which, having received the Department's approval, may be safely followed by officers called upon to perform duty in connection with courts and boards. It is believed that the general use of these forms will not only promote uniformity of procedure, and thus facilitate the work of examination and review by the convening authority, but will tend to reduce the number of omissions, irregularities, and formal errors which are often the source of vexatious annoyance and delay, and are occasionally sufficiently grave to render the proceedings fatally defective, and thereby occasion a failure of justice.

SAM C. LEMLY,
Judge-Advocate-General.

The SECRETARY OF THE NAVY.

REPORT

OF THE

SUPERINTENDENT OF NAVAL WAR RECORDS

TO THE

SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
LIBRARY AND NAVAL WAR RECORDS,
Washington, D. C., August 25, 1896.

SIR: I have the honor to transmit herewith estimates for the Office of Naval War Records and for the Department library for the fiscal year 1897–98, marked respectively A, B, and C.

Since my last annual report the second and third volumes of the Official Records of the Union and Confederate Navies in the War of the Rebellion have been published by this office, under the authority of an act of Congress approved July 31, 1894. In accordance with this act, the distribution of these volumes, comprising an edition of 10,000 copies, has been completed, as far as the lists of addresses of recipients of the Congressional and departmental quotas have been received. By the terms of the law, the volumes remaining on hand after this distribution were to be sold by the Department at 10 per cent above their cost price, the proceeds of which sale were to be turned into the Treasury, it being the intention of Congress, by the act of July 31, 1894, to limit the distribution of the Congressional quota to members of the Fifty-third Congress.

The present Congress, however, passed a joint resolution, which was approved January 30, 1896, directing that the undistributed portion of the Congressional quotas of the publication remaining on hand at that time should pass into the hands of members of the Fifty-fourth Congress, who were authorized to send in addresses for these books in the manner and form provided in the original act. This joint resolution consequently postpones the sale of volumes by the Department, which was authorized by the act of July 31, 1894, until the close of the present Congress, and in case the undistributed quotas should be entirely exhausted by that time there would remain no volumes for sale at all. The Department's quota has been distributed in accordance with your instructions to this office, and the volumes have been sent only to such naval officers as had seen active service during the civil war.

In my last report I called your attention to the fact that the quota of 1,048 allowed the Navy Department was not sufficient to supply the work to officers of the Navy, contributors, etc., and I recommended

that an increase of 1,000 copies be made to this allowance for the purpose of a more extended distribution among naval officers. The legislative, executive, and judicial bill for the current fiscal year carries an item authorizing this increase, and in compliance with your instructions the publication will now be sent to all commissioned officers upon the active list as their names appear upon the register of July 1, 1896. In view of the increased allowance to the Navy Department, an edition of 11,000 copies will henceforth be required to make complete sets of the publication, and I have therefore based the estimates herewith submitted upon this increased edition. An item of $1,300 has also been introduced to cover a similar increase for volumes 5 and 6, for the reason that the present law authorized the increase of edition only for the first four volumes.

The fourth volume of the Records is in the hands of the printer and will soon be issued, and it is hoped that two more volumes will be ready for the press during the present fiscal year. The demand for the publication has been large, and it has been found impossible for this office to supply the numerous requests for the work. Its reception by the naval service, by the press, and by the public generally has been most gratifying, and it is to be regretted that the original edition was not larger, in order that the Department could have supplied some of the many applications.

In this connection I deem it my duty to again bring to your attention the urgent necessity of a reorganization of this office. In my report of last year I gave very fully the status of the case, and I proposed a plan of reorganization which seemed to be the best one possible, and which had had the advantage of having successfully undergone the actual test of experience in the War Department in conducting a similar publication. This plan of reorganization met your approval and received your cordial support, and was duly submitted to Congress in our regular estimates of last year. It failed to become law, however, although it passed the Senate successfully. I submit herewith, for your reference, as an appendix to this report, a memorandum marked "D," presented in the Senate March 2, 1896, and referred to the Committee on Naval Affairs. This paper contains much valuable data in reference to the proposed plan of reorganization.

As I am of the opinion that the successful publication and speedy completion of this important historical work depends largely upon the adoption of some such plan of reorganization, I have the honor to renew the recommendation of my report of last year in reference to this subject.

The estimates herewith submitted therefore include an item of $51,300 for the publication fund, which figure is intended to cover the cost of additional volumes for the next fiscal year, and also to establish a board of publication in accordance with the plan of reorganization already approved by the Department, and to provide for the cost of the same, as well as for the temporary expert clerical assistance required. It includes also an item of $1,300 for increasing the edition of volumes 5 and 6 by 1,000 copies, already referred to in this report. There is no increase in the estimates of the regular clerical force of the office. A reduction of $200 in the amount of traveling expenses for the purpose of collecting war-record papers is made, as the amount granted last year is considered greater than the demands of the office now require. All of which is respectfully submitted and recommended.

The work of collecting material for the Naval War Records has been *continued during* the past year, and some additional papers of value

have been obtained. The reports of the Union commanders are full and fairly complete. It is to be regretted, however, that the Confederate records are not equally complete, which is due to the great difficulty found in collecting them, and also to the fact that a large part of the archives of the Confederate Navy Department was burned at the close of the war. Frequent careful searches throughout various parts of the country, conducted by a special agent of the Department, have brought to light many duplicates of these papers, found among the personal files of participants. The search for such matter is still being vigorously continued, but inasmuch as the field has been pretty thoroughly canvassed, I have thought best to reduce the estimate for traveling expenses allowed for such purpose.

Since my last annual report there have been added to the Department library 726 volumes. The small increase of books during the year has been due to decreased appropriations allowed us, Congress having appropriated for "professional books and periodicals" during the present fiscal year only the sum of $500. If it is the intention of the Department to keep up the present high professional standard of the library, as well as to continue to supply the Naval Intelligence Office with technical and professional information, a more liberal appropriation should be allowed for its support.

Very respectfully,

RICHARD RUSH,
Superintendent Naval War Records.

The SECRETARY OF THE NAVY,
Navy Department.

APPENDIX.

[Senate Document No. 148, Fifty-fourth Congress, first session.]

[Memoranda regarding Naval War Records prepared in the office of Naval War Records at the request of Senator Chandler, March 2, 1896.]

NAVAL WAR RECORDS.

Estimates submitted for 1896–97.

Publication of the Official Naval Records of the Rebellion:

For continuing the publication of the Official Records of the Union and Confederate Navies in the war of the rebellion, in accordance with the plan approved by the Secretary of the Navy under the act of Congress approved July 31, 1894, and for the purpose of making such maps and illustrations as relate to the work, and for increasing the whole edition (from the beginning) from 10,000 to 11,000 copies of each volume, said increase to be in addition to the present quota of the Navy Department, for the purpose of supplying such officers of the Navy (who have not already received the work) as the Secretary of the Navy may direct, and for the compensation of such temporary expert services in connection with the preparation, publication, and distribution of said records as may be deemed necessary by the Secretary of the Navy, such experts to be selected and appointed by the Secretary of the Navy from time to time as the necessity therefor arises, the sum of $50,000: *Provided*, That hereafter the preparation of said records shall be conducted, under the Secretary of the Navy, by a board of three persons, one of whom shall be an officer of the Navy, to be selected by the Secretary of the Navy, and two civilian experts, to be appointed by the Secretary of the Navy, the compensation of said civilian experts to be fixed by the Secretary of the Navy and to be paid from this appropriation $50,000

Amount allowed in legislative, executive, and judicial bill reported February 18, 1896.

For continuing the publication of the Official Naval Records of the Rebellion, both Union and Confederate, in accordance with the plan adopted by the Secretary of the Navy under the act of Congress approved July 31, 1894 ..... $18,000

Table showing appropriations made for Naval War Records.

July 7, 1884, salaries		$2,640
March 3, 1885, salaries		2,640
July 31, 1886, salaries		2,640
March 3, 1887, salaries		2,640
July 11, 1888, salaries		6,280
February 25, 1889, salaries		9,880
July 11, 1890, salaries		16,680
March 3, 1891, salaries		16,680
July 16, 1892, salaries		16,680
March 3, 1893, salaries		16,680
July 31, 1894, salaries	$16,680	
July 31, 1894, publication	15,000	
		31,680
March 3, 1895, salaries	16,280	
March 3, 1895, publication	22,000	
		38,280
Total		163,400

NAVAL WAR RECORDS.

SYSTEM OF COMPILATION AND PUBLICATION EMPLOYED AT PRESENT.

In order to clearly understand the work of this office, which, under authority of Congress (act approved July 31, 1894), is at present engaged in the publication of the Official Records of the Union and Confederate Navies in the War of the Rebellion, the following brief outline is here given, describing the various stages through which the work passes from beginning until completion. This outline covers the course of the publication from the selection of the original material of which it is composed until the finished volumes are finally received from the printer and distributed by this office all over the country, in accordance with the terms of the law governing this distribution.

I.—*Source and selection of material.*

The material for the work of the Naval War Records is taken from a variety of sources, all of which are official in character. Among the chief sources of supply may be mentioned the original log books and record files of the Navy, War, State, and Treasury Departments, relating to naval operations, outfit, and equipment, during the period of the civil war from 1861 to 1865. Another important lot of material, especially in Confederate matter, is documents loaned to this office by participants. We have a large and valuable collection of this class of papers, comprising the official journals and letter books of nearly all the higher officers on each side of the conflict. The collection is still being increased through the means of a traveling agent specially appointed to seek out and collect these papers.

The foregoing material, amounting in round numbers to some 7,000 or 8,000 books of original manuscript, is carefully read with a view to selecting and marking for copy such papers as may be considered pertinent to the character of the work. Letters so marked are copied and verified, and form the nucleus of the subsequent compilation. It will be apparent that this first reading of original manuscript is a task of the utmost importance to the historical value of the publication, and it is also one which, from its large proportions and technical character, requires qualities and capabilities of a special kind. Experience has shown that graduates of the Naval Academy make the most efficient clerks for this part of the work. Much of the material consists of technical naval data about ships, their construction, equipment, and outfit; the purchase and employment of chartered vessels; the formation of fleets and squadrons, their batteries and crews; the development and use of monitor batteries, together with matter relating to submarine mines and torpedoes; the establishment, maintenance, and supply of the blockade, and many other subjects of kindred nature. Connected closely with the foregoing is the construction of maps and drawings and illustrations, both in line and free-hand drawing, all of which require technical expert service.

II.—*Preparation of manuscript.*

After material has been selected, it is copied and carefully verified, and then passes to the geographical clerk, who reads it for the correct spelling of geographical names. Then it goes to the proper name clerk, who reviews it for the correct spelling of all proper names, including those of officers and vessels. Dates are also examined and verified. The copies are then assorted, collated, headed, and classified, according to the plan of publication adopted by the Department, when the material is brought to the compilers. The work of compilation then begins, each paper being read and inspected by the compilers, its authenticity examined, its merits weighed, and its acceptance or rejection decided. As the law requires only the publication of official documents, care is used that only such shall be printed; but it often becomes a fine point to decide exactly what is an official document.

This question must be settled by the compilers. Numerous other questions constantly arise in the course of the compilation, some of which are of the utmost gravity and importance, affecting the interest of the two contending parties in the civil war, personalities, diplomatic correspondence, and other important matters, requiring discretion, judgment, and care on the part of the compilers in their final disposition of them. From this it will be seen that the work of the compilers is one requiring the most capable and efficient service in order that the compilation may be of genuine historical value as a book of reference. Illustrations, maps, drawings, etc., are submitted to the compilers for their examination and approval.

III.—*Printing, indexing, binding, wrapping.*

After the volume has passed the compilers, it is ready for the Public Printer, when it is sent to the Government Printing Office and ordered to be printed. It is then returned by the Printer to this office in galley form, when it is proof read and corrected, and sent back to the Printer. A second revise of the pages is then returned to this office, to see that all corrections have been made. It then goes again to the Printer, and comes back in book form, ready for indexing. The index is then made by us and the volume returned to the Printer. Illustrations, tracings, drawings, etc., are also examined at this time and sent to the Printer, and the book is finally bound and wrapped, and an edition of 10,000 copies delivered to the Navy Department for distribution. In the matter of this proof reading and indexing, it is important that efficient clerical help should be available, inexperienced persons causing much confusion and delay in the proper execution of the work.

IV.—*Distribution.*

By the terms of the law, the distribution of this publication comprises two separate and distinct kinds, both to be made by this office, as follows:

I. The Congressional distribution, or that directed by Members of the Fifty-third Congress, and comprising a total of 8,952 copies of each volume.

II. The departmental distribution, or that directed by the Secretary of the Navy, and comprising a total of 1,048 copies of each volume.

Each Senator is allowed 24 and each Representative 19 addresses for complete sets of the publication, and these names and post-office addresses are sent to us by Members of Congress. An accurate record is kept of each name and address so filed in this office, as well as the names of the departmental quota, and the dates upon which the various volumes are mailed to such addresses are duly entered. Duplications are not permitted, and recipients must be notified at whose instance the books are sent. In order that this distribution may be done correctly, expeditiously, and without confusion, careful management is necessary, and an elaborate system of books and correspondence has been adopted, which thus far seems to give satisfactory results.

EXTRACTS FROM REPORT OF LIEUT. COMMANDER RICHARD RUSH, U. S. N., SUPERINTENDENT NAVAL WAR RECORDS, SUBMITTING ESTIMATES FOR THE FISCAL YEAR 1896–97, WITH EXPLANATORY NOTES ABOUT THE SAME.

[Extract from Report of Superintendent Naval War Records.]

"In order to carry out properly the views of Congress in reference to this publication, I deem it essential that there be a reorganization of this office and an increase in expert clerical assistance. It is estimated that there is enough original manuscript selected to make between 20 and 30 volumes of the records of from 900 to 1,000 pages each. To get this material into the proper shape necessitates the reading of between 7,000 and 8,000 volumes of original manuscript, with a view to the selection of such papers as may be pertinent to the character of the work. The papers so selected are copied, verified by the originals, carefully examined as to dates and correct spelling of geographical and proper names, and are then classified, collated, headed, and compiled, after which the proof is read and the volume printed, indexed, bound, and wrapped, when it is distributed all over the country, to the addresses filed in this office by Members of Congress, to authorized recipients of the work. This distribution of 10,000 copies of each volume, of which an accurate record must be kept, is in itself no small undertaking, and necessitates an amount of detail and attention which requires care. The correspondence, also, of the office in reference to the publication and distribution of the records has grown into large proportions."

To place the office of Naval War Records upon an efficient footing, so as to perform satisfactorily the work of compilation and publication as herein outlined, a plan of reorganization is proposed, consisting of a board of publication, to be composed of three members, one of whom shall be a naval officer and the other two civilian experts. The War Department having had a broad experience in a similar publication, it seems wise for us to examine into their methods with a view to adopting such parts of them as may be expedient, and the consensus of opinion in that Department is unqualifiedly in favor of such a board of publication. The board should be constituted by law and its members appointed by the Secretary of the Navy.

[Further extract from Report of Superintendent Naval War Records.]

"An examination of the present plan of publication which has been adopted by the Department will show that the selection of original manuscript to be introduced into the records rests entirely in the hands of the superintendent. I am of the opinion, in the interest of the true historical value of the work, that this duty could be performed to better advantage by a board of publication, to be composed of one naval officer and two civilian expert members. There seem to be strong reasons in favor of this board, chief among which may be cited that such an organization would give a definite and settled policy to the management of the publication until its completion, which changes of the naval member would not affect. That such a settled policy is vital to the success and speedy completion of the work seems to be beyond question. Another reason in favor of such a board, if properly constituted, is that the question of the selection or rejection of original manuscript for introduction into the compilation could be more fairly decided upon to the impartial interest of each side of the conflict in the civil war, an important consideration to the historical value of the work. The plan of a board of publication has given satisfactory results in the War Department in the work of the Army War Records, a publication similar to our own."

Temporary expert assistance is also proposed, the reasons for which are fully explained in the following extracts from the superintendent's report:

[Further extracts from Report of Superintendent Naval War Records.]

"To execute properly the task of publication of this important historical work, as thus briefly outlined, the force of this office is, in my judgment, entirely inadequate. During the past year, by the most assiduous and unremitting labor, we have managed to get out one volume and nearly completed another, which, although a fair beginning, is still an exceedingly small showing when the magnitude of the future work is considered. In view of the large sums which have already been supplied under authority of Congress for the collection and preparation of these records, it would seem to be in the true interest of economy to the Government that their publication should now be pushed to completion without unnecessary delay.

"The estimate for the publication fund has been increased to the sum of $50,000, which figure is intended to cover the cost of the additional volumes for the next fiscal year, and also to establish a board of publication, as recommended in this report, and to provide for the cost of same, as well as to provide for the temporary expert clerical assistance required. It also allows for the increase of 1,000 copies in the quota of the Department. All of which is hereby respectfully submitted and recommended."

It is proposed that an item covering the creation and maintenance of such a board, as well as the employment of temporary expert clerical assistance, be introduced in the estimates under the head of the publication fund.

The following is the item submitted:

"Publication of the Official Naval Records of the Rebellion: For continuing the publication of the Official Records of the Union and Confederate Navies in the War of the Rebellion, in accordance with the plan approved by the Secretary of the Navy, under the act of Congress approved July thirty-first, eighteen hundred and ninety-four, and for the purpose of making such maps and illustrations as relate to the work, and for increasing the whole edition (from the beginning) from ten thousand to eleven thousand copies of each volume, said increase to be in addition to the present quota of the Navy Department, for the purpose of supplying such officers of the Navy (who have not already received the work) as the Secretary of the Navy may direct, and for the compensation of such temporary expert services in connection with the preparation, publication, and distribution of said records as may be deemed necessary by the Secretary of the Navy, such experts to be selected and appointed by the Secretary of the Navy from time to time as the necessity therefor arises, the sum of fifty thousand dollars: *Provided*, That hereafter the preparation of said records shall be conducted, under the Secretary of the Navy, by a board of three persons, one of whom shall be an an officer of the Navy, to be selected by the Secretary of the Navy, and two civilian experts, to be appointed by the Secretary of the Navy, the compensation of said civilian experts to be fixed by the Secretary of the Navy and to be paid from this appropriation."

The following extract from the superintendent's report explains the reasons for increasing the Department's quota:

"In this connection I desire to bring to your notice the fact that the quota of 1,048 copies allowed the Navy Department is not sufficient to supply the work to officers of the Navy, contributors, etc., so that by your direction the volumes have been sent only to such naval officers as had seen active service during the civil war. It seems, however, only just that all officers of the Navy should be supplied with the work if they desire it, and to this end I recommend that Congress be asked to increase the quota of the Navy Department by 1,000, making the whole edition 11,000 copies."

APPENDIX PREPARED BY SENATOR CHANDLER.

Table showing appropriations made for publication of Army War Records.

Date.	Object of appropriation.	Amount.
June 23, 1874	To begin publication of the Official Records of the Rebellion	$15,000
Mar. 3, 1875	For continuing the publication	50,000
July 29, 1876	For publication	40,000
Mar. 3, 1877	Do	20,000
June 20, 1878	Do	40,000
Mar. 3, 1879	Do	40,490
		205,490
June 16, 1880	For publication (first volume issued)	40,000
Mar. 3, 1881	For publication (salaries, clerks)	34,680
	Rent, traveling expenses, etc	5,810
	For preparation and publication	40,000
Aug. 5, 1882	Salaries	41,120
	Rent, traveling expenses, etc	5,810
Aug. 7, 1882	Publication	36,000
Mar. 3, 1883	Salaries	37,986
	Publication	36,000
July 7, 1884	Salaries	32,280
	Publication	36,000
Mar. 3, 1885	Salaries	32,280
	Publication	36,000
July 31, 1886	Salaries	27,380
	Rent	1,200
Aug. 4, 1886	Publication	36,000
Mar. 3, 1887	Salaries	27,380
	Rent	1,200
	Publication	36,000
July 11, 1888	Salaries	27,380
	Rent	1,200
Oct. 2, 1888	Publication	36,000
Feb. 26, 1889	Salaries	27,380
	Rent	1,200
Mar. 2, 1889	Publication Board provided	100,000
July 11, 1890	Salaries	31,780
	Rent	1,200
Aug. 30, 1890	Publication, board, and experts	235,000
Mar. 3, 1891	Salaries	31,780
	Rent	1,200
	Publication	235,000
July 16, 1892	Salaries	31,780
	Rent	1,200
Aug. 5, 1892	Publication	235,000
Mar. 3, 1893	Salaries	31,780
	Rent	1,200
	Publication	175,000
July 31, 1894	Salaries	31,780
	Rent	1,200
Aug. 18, 1894	Publication	145,000
Mar. 2, 1895	Salaries	15,380
	Rent	1,200
	Publication	145,000
	Deficiency appropriation	12,000
	Total	2,305,078

Estimates for 1896–97.

Publication of Official Records of the War of the Rebellion:

Continuing the publication of the Official Records of the Union and Confederate Armies, including the atlas of maps and plans, in accordance with the plan approved by the Secretary of War August third, eighteen hundred and eighty, and for the compensation of such temporary expert services in connection with the preparation, publication, and distribution of said records as may be deemed necessary by the Secretary of War, and for the purchase of stationery and for additional rent, not exceeding one thousand eight hundred dollars, and for traveling expenses of the agent for collection of records, to be disbursed under such regulations as the Secretary of War may prescribe, not exceeding five hundred dollars $175,000

OPERATIONS OF THE NAVAL MILITIA.

NAVY DEPARTMENT,
OFFICE OF THE ASSISTANT SECRETARY,
Washington, D. C., December 1, 1896.

SIR: I have the honor to transmit herewith a report upon the status of the Naval Militia, and of their operations in connection with the Navy during the past year.

The older organizations continue to grow in numbers and in the public favor, their efficiency is being gradually developed, and new battalions are forming in States where their services can be of the highest importance in case of war.

During the past summer, in company with Lieut. A. P. Niblack, United States Navy, who, until September 1, was charged with Naval Militia affairs in this office, I visited the Naval Militia organizations of New Jersey, Illinois, and Michigan, as I had on former occasions visited others, and was present during the joint encampment of the Rhode Island, Connecticut, and New York detachments at Gardiners Island. I was thus able to personally examine the personnel, and to have conferences with the officers concerning their local requirements and their possibilities of seconding the work of the Navy, especially in the defense of the coast and water frontiers.

The joint encampment at Gardiners Island, the first attempt at the combination of the Naval Militia organizations from several States for the purpose of drill and instruction, had its initiative in the desire of the Department to stimulate emulation among the commands, to afford opportunity for mutual comparison and competition, and at the same time give them greater facilities for practical work on board of vessels of war than would be possible should the time these vessels could be spared from their regular duties be divided among the States participating.

The success of this encampment was sufficient to confirm the Department in its opinion that it would be a good policy on its part to favor similar action in the future. Should it be possible for a group of contiguous States to fix a period for a joint camp, at a date sufficiently in advance to insure full attendance, the Navy Department would be better able to provide officers and ships for their instruction.

The Department wishes to express its thanks to Mr. J. L. Gardiner, the owner of that historical island, for his patriotism and liberality in placing his land and all its facilities freely at its disposition, and for

his constant kindness and courtesy during the duration of the joint encampment.

The appropriation for supplying the Naval Militia with arms and equipments was at the last session increased to $50,000, and authority granted to supply boats and their equipment under this appropriation. It is recommended that the same amount be again appropriated under wording similar to the last act.

The supply of obsolete guns, artillery, and their equipment, and of boats and their accessories, has practically become exhausted. These at best were only a temporary substitute, and usefully served for purposes of drill and instruction, but it is the intention of the Department, as the money becomes available, to arm the Naval Militia with the small arms and artillery that are used in the Navy, so that in case of mobilization they can be readily associated with the regular service with their arms and equipments, and a dissimilarity of ammunition will not be a source of confusion.

In the same way serviceable boats will be gradually supplied to them, with standard fittings and accessories for landing expeditions, so that when called into service they will come with boats of the standard type and a habit to use them.

During my visit of inspection to these organizations I have invariably been impressed by the fact that before me was a selection from the best elements of the locality, of youth, strength, courage, and intelligence, animated by enthusiastic patriotism and zeal for instruction, which only needed proper training to produce a body of men that would go far toward insuring the protection of their water frontiers, and be a most valuable source of supply for the Navy.

They have prospered and grown mainly through their own energy and persistency, in face of the opposition of their military competitors for the popular favor, of varying opinions as to their usefulness and the exact part they were to fill in the national defense, and of the lack of suitable instruments for their instruction.

The Navy Department has from the beginning encouraged them in every way possible within the limits of existing laws, and it is much to their credit that their association with the Navy in their yearly drills has gradually changed the opinions of many naval officers as to their efficiency for service, in case of war, auxiliary to the standing Navy.

In this connection I beg to call your attention to the reports upon the drills and exercises of the Naval Militia in connection with the Navy made by officers of the various ships detailed for this purpose and to the remarks upon the question of their utility as auxiliary to the Navy in case of war. It will be remarked that they have expressed, in nearly every instance, belief and confidence that these organizations will form a powerful adjunct to the Navy in the defense of the coasts, and be a valuable source of supply to draw from should it be necessary to increase the personnel of the Navy to a war footing.

The Naval Militia have been very fortunate in the officers of the Navy detailed to have this work in charge. The present condition of the organization is largely due to their zeal and professional ability, and the line of excellent officers is continued by the selection of Lieutenant-Commander Buckingham, under whom the work will now continue.

Very respectfully,

W. McADOO,
Assistant Secretary.

The SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, December 1, 1896.

: I beg to submit the following report upon the State Naval as for the current year:

› naval appropriation act, approved March 2, 1895, contained the ing provision:

ıl Militia: For arms and equipments connected therewith, and for the printing essary books of instruction for Naval Militia of various States, under such tions as the Secretary of the Navy may prescribe, twenty-five thousand dollars.

› thousand dollars of this amount was set aside for books of ıction and the remainder was allotted to the several States in pro- ›n to the number of enlisted men returned by the respective nors as regularly mustered into the militia forces of the State and ded with naval uniforms, as follows:

State.	Enlisted men.	Allotment.
ıusetts	439	$3,155.44
sland	149	1,070.98
ıcut	92	661.28
rk	383	2,752.92
·sey	312	2,242.59
vania	132	948.79
ıd	197	1,415.99
arolina	162	1,164.42
arolina	165	1,185.98
	98	704.40
ıa	217	1,559.75
ia	417	2,997.30
	395	2,839.17
n	181	1,300.99
›tal	3,339	24,000.00

› State of Louisiana reported a Naval Militia organization com- l, and for the first time shared in the annual allotment.

ut. A. P. Niblack, United States Navy, continued in charge of aval Militia affairs under your direction until September 1, and this was assigned to me on the 1st of October. I have had, conse- ›ly, no opportunity to personally inspect the various organizations, ıust refer to the reports on file in this office made by the various s of naval officers of the ships which were detailed for their ıction during the past year for the following data concerning their and efficiency.

usual, it was found impossible during the past season to provide ind of ships that were best adapted for instruction at times that most suited to the arrangements made by the State authorities for nnual period of instruction. During the joint camp at Gardiners d of the Naval Militia of Rhode Island and Connecticut and a part ıt of New York, the Department was able to have present the "*Cin- ti*," "*Montgomery*," "*Dolphin*," and the "*Nina*," and much more use- ıowledge and experience was derived by those participating than l have been possible had the drills been held separately; and, d it be feasible in the future for adjoining States to fix a time of encampment, it would be much easier for the Department to ge for the presence of suitable ships for a longer period, and at the time the members of the Naval Militia, who are mostly busy men, , if the date was known sufficiently in advance, arrange for absence their occupations, and a fuller attendance would be assured.

Unless some such arrangement be effected, the difficulty of supplying ship instruction to the various Naval Militia commands will increase as their number increases.

The vessels of the Home Squadron, even when not actually engaged on service required by the policy of the United States, are constantly occupied in the instruction of their own personnel, and it is often very inconvenient, and sometimes impossible, to divert vessels from their regular duties for the instruction of small bodies of Naval Militia, when at an expenditure by the States much smaller in amount than that now borne by the Department joint camps might be formed and opportunities for drills and exercises on board ship be greatly increased.

During the past summer the Naval Militia organizations received instruction on board naval vessels as follows:

Massachusetts.—The Naval Brigade of Massachusetts were quartered during the week of July 11–18 on board the "*Minnesota*," which had been towed to an anchorage in the outer part of Boston Harbor. The U. S. S. *Columbia* was present, and a series of drills were held on board, and on the 17th the "*Columbia*" had target practice under way, all the firing and recording being performed by the Naval Militia officers and men. In addition, some reconnoissance work was done by them.

Rhode Island.—The Rhode Island battalion took part in the joint encampment at Gardiners Island during the week, July 11–18. They were brought to camp by a steamer chartered by the State and returned in their own boats, assisted by the tug "*Nina*," making a running reconnoisance of the coasts en route. The week was passed in drills on board the ships in attendance, in their boats, and on shore.

Connecticut.—The Connecticut battalion also took part in the joint encampment at Gardiners Island. They were embarked on the "*Cincinnati*" on the morning of the 11th of July and returned on the same ship the 16th to New Haven.

New York.—A portion of the New York City battalion took part in the joint camp at Gardiners Island. The tug "*Nina*" brought them from New York on July 11 and they returned on the "*Montgomery*" on the 15th. This tour of service was entirely voluntary on the part of the participants, as the State had not required any specified term of duty. The Second Separate division of the Naval Militia of this State went into camp at Chaumont Bay, Lake Ontario, for the week of July 19–26. An officer from the Naval War College was detailed by the Department to be present during the encampment to assist them in their instruction and to report upon their condition. Boat work formed an important part of their daily drill, proficiency in which is particularly desirable in those waters.

New Jersey.—The Naval Militia of this State is divided into two battalions. That of the west had opportunities to drill on board the "*Raleigh*," from July 13 to 16, inclusive, and parts of this battalion were on board from 10 a. m. till 4.30 p. m. on those days. The battalion of the east had similar opportunities offered on the "*Montgomery*," and details came on board after business hours on July 16 and 17. These drills were entirely voluntary, as the specified tour of State duty was taken up by a short cruise on the sailing ship "*Portsmouth*."

Pennsylvania.—The two divisions from this State, from Philadelphia and Pittsburg, assembled at the former place, embarked on two ice boats belonging to the city on July 10, and made a cruise down the river. The battleship "*Indiana*" was sent to the Delaware Breakwater for their instruction, and afforded opportunity for practical drills on

board for three days. They were exercised at the 6-inch and rapid-fire guns, at torpedoes, and at target practice at anchor.

Maryland.—The U. S. S. *Dale*, which has been loaned to the State of Maryland for an armory, was towed to Tolchester Beach, and the Naval Militia of that State were quartered on board during the week of July 10–17, when the U. S. S. *Amphitrite* was anchored near by for their practical instruction, and from the 11th to the 17th, inclusive, they had suitable drills on board.

North Carolina.—The Naval Militia of this State embarked on the monitor "*Nantucket*," which has been loaned for their use, and proceeded on the 23d of June to Southport, where the "*Amphitrite*" was found ready to assist in their instruction; practical exercises were held on board for four days, and on the fifth target practice at sea completed their tour of duty. The condition of the "*Nantucket*" was unfavorably commented on by the board. These monitors are in such a bad state of repair that it is difficult to keep them in proper order. They are the only ships available, and are loaned to the States on the condition that they be properly looked after. Reports of the condition of the monitors loaned to the other States show more care in their maintenance.

South Carolina.—The Naval Militia of this State is divided into three divisions, the first two at Charleston, and the third at Port Royal. The Charleston divisions were drilled on board the U. S. S. *Raleigh*, on the 15th to 17th of June, inclusive, and the third on the 19th and 20th of the same month.

Georgia.—A company at Brunswick and one at Savannah compose the Naval Militia of this State, and the "*Amphitrite*" furnished opportunity for practical instruction to the former on June 15 to 17, inclusive, and to the latter from June 18 to 20, inclusive. Both commands had the advantage of target practice from the "*Amphitrite*."

Louisiana.—The battalion of this State encamped near Port Eads, near the mouth of the Mississippi River, and were drilled on the U. S. S. "*Raleigh*" on the 26th to 29th of June, inclusive, and on the 30th the entire detachment came on board and was transported to New Orleans, with various exercises en route.

Illinois.—The U. S. S. *Michigan* embarked the First Naval Militia Battalion of this State at Chicago on July 27 and proceeded to Camp Logan, where they landed and went into camp with the Second Battalion, composed of three divisions from Moline and Alton. They were drilled on the "*Michigan*" July 27 to 31, inclusive, as the weather permitted, but the situation of the camp was such that boat work was for part of the time impracticable.

Michigan.—The Naval Militia of this State is composed of three divisions, the First and Second, with the battalion staff, are at Detroit, and the Third at Saginaw. The U. S. S. *Michigan* devoted two weeks to their instruction. A large part of the regular crew was landed and their places filled on board by the Naval Militia, and the service of the ship was performed by them under the supervision of the naval officers attached to the vessel.

California.—The Naval Militia of this State is composed of five divisions—two at San Francisco, one at Santa Cruz, one at Eureka, and one at San Diego. Earnest effort was made by the rear-admiral commanding the naval forces on the Pacific Station to arrange a tour of duty for these divisions, so that suitable practical instruction might be afforded them, but the State authorities were unable to fix upon any time which would answer this purpose. Facilities for drill were afforded

by the ships of the squadron, whenever possible, and these opportunities were taken advantage of by the different divisions after their daily occupation had been completed with commendable zeal at much personal inconvenience.

The detailed report of these drills, made by the officers of the ships which participated, are hereto appended.

The subject of suitable arms and equipments of all kinds for these organizations is important and should receive immediate attention and decision. The small arms and artillery that have been furnished for their use have, for the most part, been obsolete material which had served its time in the Navy. This was better than nothing, perhaps, for encouragement and instruction, but the time seems to have come when, the doubt existing as to the usefulness and permanency of these bodies having passed away, they should be supplied with arms and equipments such as are used in the Regular Navy.

Should the Navy Department prescribe a standard organization formed in accordance with its own regulation, detailing the number of men and officers for sections, companies, divisions, battalions, and brigades, and specifying their arms, equipments, number of boats, camp equipage, and everything necessary to complete the material of a landing party of specified strength, and the yearly appropriation of Congress be spent with this end in view, it is believed that in a few years a well-equipped Naval Militia which could be mobilized with the regular service without delay or friction would be developed.

It is the intention of the Department to communicate to the Naval Militia commands in the States that have shown sufficient efficiency to take hold the scheme prepared at the War College for naval coast defense. These plans relate to places which are not embraced in the plans of military defense by the War Department, but which would have to be protected by mine fields covered by improvised batteries, by a large number of small craft fitted as scouts, torpedo boats, and rams, and connected by a coast line of signal stations for intercommunication andcommunication with an outlying fleet. With a knowledge of these plans the drills and instruction of the Naval Militia will be focused toward the actual part they will be called upon to perform in time of war. A great deal will be required of them, and it will require years of patient application before a perfect plan results, but it is believed that an intelligent appreciation of what they have to do will not check the zeal and enthusiasm of such men as are found in these organizations.

The subject of submarine mining will be an important one for them to consider, and practical drill with mines will be necessary. It is therefore suggested that the words "and submarine mining outfits" be added to the wording of the appropriation to be made by this Congress, so that they can be furnished with the material required for their instruction and for actual defense in time of need.

The opportunity to practice with great guns is limited to the time that can be arranged for drill on board the cruising ships of the home stations—only a few hours each year. To increase their efficiency in this respect, I would recommend that, when the armament for the auxiliary cruisers now authorized be completed, a portion of it be mounted on the ships now loaned to the Naval Militia as armories, where proper care can be assured, and which would serve to make them acquainted with the very guns they might be called upon to use. It seems that these guns would thus serve a most useful purpose, and at the same time be cared for without expense to the Department.

The subject of torpedo boats also merits consideration, and should

Congress see fit to appropriate for one or two second-class torpedo boats and a small supply of torpedoes for each port where there exists a sufficient number of Naval Militia, they would insure the development of a trained body of men of the greatest value in time of need, and at the same time increase the material for defense. The Whitehead and Howell torpedoes, which have been adopted for the service, are delicate and complicated instruments, and no one can become efficient in their use without careful instruction and considerable experience.

In conclusion, I beg to call to your attention the lack of office accommodation provided by the Department. Valuable papers are constantly accumulating, which should have some place provided for their preservation which would permit of convenient reference. At present, systematic work is almost impossible, and vexatious delay and want of information can not be avoided.

I should therefore recommend that a suitable room be provided in which to keep the property and records pertaining to the Naval Militia, and that a clerk of class 1 be detailed for this duty, as provided for in the appropriation act passed at the last session.

Very respectfully,

B. H. BUCKINGHAM,
Lieutenant-Commander, United States Navy.

The ASSISTANT SECRETARY OF THE NAVY.

NAVAL MILITIA OF MASSACHUSETTS.

U. S. S. COLUMBIA, FIRST RATE,
At sea, July 30, 1896.

SIR: In obedience to your order of the 5th instant, we have the honor to submit the following report upon the Massachusetts Naval Militia:

The Naval Brigade of the Massachusetts Volunteer Militia was in active service during the week July 11 to 18, inclusive, with headquarters on the U. S. S. *Minnesota*. This vessel was towed to an anchorage in Boston Harbor, off Gallops Island, on Sunday, July 12, where she remained until Saturday, July 18. On the 13th, 14th, 15th, and 16th instants, during the forenoon, four divisions were sent each day on board the "*Columbia*," where they received instruction from the "*Columbia's*" officers in the mechanism and method of handling the guns of both main and secondary batteries, and were afterwards drilled at the guns by their own officers. They were also shown the location of magazines, shell rooms, etc., and everything pertaining to ammunition was carefully explained to them. The division of engineers was also instructed in work about the engineer's department.

The programme for the week gave to each division one day at reconnoissance work in the vicinity of Nantasket Beach. The afternoons, for those not in camp, were devoted to boat and artillery drills and small-arms target practice.

On the evening of the 16th instant the "*Columbia*" got under way and anchored outside of Boston Light.

On the morning of the 17th instant the entire Naval Brigade, with the acting governor of Massachusetts and staff, came on board. Targets were placed by their own force, boats for markers were established, and the "*Columbia*" was steamed by the targets at distances varying between 1,200 and 1,500 yards, two shots being fired from each gun except the 8-inch and 1-pounders. The practice was conducted entirely by the officers and men of the Naval Brigade, the "*Columbia's*" officers being present only to guard against accidents. The firing was slow, but very good, the slowness being chiefly due to the want of experience of the gun captains in handling the mechanism of the guns.

The average attendance during the week was 85 per cent of the total enrollment of 485 officers and enlisted men.

The form of organization is that of the naval brigade, composed of two battalions of four companies each, with a medical corps, ordnance corps, commissary corps, signal corps, engineer's force, and a torpedo division. House bill No. 992, Commonwealth of Massachusetts, of March, 1896, relative to the Naval Brigade of the Militia

of the Commonwealth of Massachusetts, herewith appended, gives detailed information regarding the personnel of the organization.

The professional knowledge shown by the brigade in artillery and infantry tactics, great-gun and small-arm target firing, and in camp life was good, but their knowledge of ship life and of matters pertaining to the duties of a sailor is naturally limited, owing to the short period (one week annually) allowed for active service on board ship.

The brigade now having their headquarters permanently on board the "*Minnesota*," it is thought that much more knowledge concerning ship life and the duties of a sailor will be developed.

The discipline of the entire organization seemed to be very good.

The present uniform of the brigade is the white working suits of the Navy, and also a blue uniform not at all suited to the work. The blue dress uniform of the Navy is now being made, to replace the latter, and the engineer, torpedo, and signal divisions are already equipped with it.

Concerning the efficiency in various ratings, we find the petty officers generally well qualified to fill their positions, except where a knowledge of seamanship and matters relating thereto are concerned.

As to the probable field of usefulness and availability in time of war, our opinion is that but few of the men now enrolled would actually enlist as seamen or petty officers in the Navy.

As a class they are men of education and good social standing who take an interest in naval matters, are very patriotic, and who have an earnest desire to fit themselves to become useful to the country during war time.

The instruction they receive will in time render them very efficient men in manning the auxiliary defenses of the nation, such as seacost defenses, improvised batteries, transports, supply vessels, scouts, repair ships, and brigade operations, reconnoissance work, etc. They are well drilled in infantry and artillery practice, and, as a rule, are excellent marksmen.

The class of men comprising the organization was found to be as follows: Engineers, 22; machinists, 24; electricians, 23; carpenters, 7; mechanics, 7; miscellaneous (men of various trades, general workmen), 40; the remainder being clerks, students, salesmen, brokers, firemen, etc. Four officers and about ten men have had some service in the Navy.

All the brigade are men of high moral standing, and are required to pass a physical examination, while the officers pass in addition a mental examination, in order to qualify for their commissions.

We append herewith a letter from Capt. John W. Weeks, chief of brigade, which gives additional data concerning the organization.

Very respectfully, your obedient servants,

WM. H. DRIGGS, *Lieutenant, U. S. N.*
O. W. LOWRY, *Lieutenant, U. S. N.*
J. A. DOUGHERTY, *Lieutenant, U. S. N.*

The COMMANDING OFFICER U. S. S. COLUMBIA.

HEADQUARTERS NAVAL BRIGADE,
MASSACHUSETTS VOLUNTEER MILITIA,
South Armory, Boston, July 20, 1896.

SIRS: The Massachusetts Naval Brigade performed its tour of duty on board the U. S. S. *Minnesota* in Boston Harbor, off Gallops Island, July 11 to 18, inclusive. The organization was paid by the State for six days' duty when the average attendance was 0.85 per cent, and for the eight days 0.846 per cent of the total enrollment of 485 officers and enlisted men.

For form of organization I attach herewith a copy of an act of the Massachusetts legislature of 1896 reorganizing the Naval Brigade, which gives the form of organization.

The men of the engineer and torpedo divisions, attached to headquarters, are recruited from the class of men whose vocations qualify them to do the work characteristic of these corps. The engineer division has a full enrollment, thirteen of whom hold licenses as marine engineers.

Of the officers of the brigade there are about fifteen who hold special second-class pilots licenses.

The uniform of the organization is the white working suits, the same as used in the Navy, and a blue uniform not at all suited for the work, and which is soon to be changed for the blue mustering suits, the same as used in the Navy.

The engineer, torpedo, and signal divisions are already equipped with this uniform.

The men in the organization consist of clerks, salesmen, brokers, etc., aside from

those in the list given herewith, and care is taken in recruiting that the class of men is of a high standard morally and they pass a physical examination.

Very respectfully,

JOHN W. WEEKS,
Captain, Chief of Brigade.

Lieuts. W. H. DRIGGS, O. W. LOWRY, and J. A. DOUGHERTY,
U. S. S. Columbia, Boston Harbor.

AN ACT relative to the Naval Brigade of the Militia of the Commonwealth.

Be it enacted by the senate and house of representatives in general court assembled, and by the authority of the same, as follows:

SECTION 1. The officers of the Naval Brigade shall consist of one captain, who shall be chief of brigade, and whose rank and pay shall be the same as that of a colonel of infantry.

Two lieutenant-commanders, who shall be chiefs of battalion, and whose rank and pay shall be the same as that of a major of infantry.

The senior lieutenant-commander shall be executive officer of the Naval Brigade, the junior lieutenant-commander the navigator of the Naval Brigade, in addition to their duties as chiefs of battalion.

A staff, which shall consist of a surgeon, brigade adjutant, an ordnance officer, an equipment officer, a paymaster, who shall be the mustering officer for the brigade, an engineer, a signal officer, and an assistant surgeon.

The surgeon shall be a lieutenant-commander, and shall have the rank and pay corresponding with that of a major of infantry.

The other staff officers, except the paymaster, signal officer, and assistant surgeon, shall have the rank of lieutenants, and shall have the rank and pay corresponding with that of captains of infantry.

The paymaster, signal officer, and assistant surgeon shall have the rank of lieutenant (junior grade), and shall have the same rank and pay as first lieutenants of infantry.

There shall also be attached to the brigade staff the following petty officers:

One master-at-arms, who shall be the chief petty officer of the brigade, and who shall have the rank and pay of a sergeant-major of infantry.

One equipment yeoman, two paymaster's yeomen, one apothecary, and one chief bugler, all of whom shall have the same rank and pay as noncommissioned staff of infantry.

There shall also be attached to headquarters of the naval brigade an engineer's force, which shall consist of four machinists, who shall have the rank and pay of noncommissioned staff of infantry; three water tenders and three oilers, who shall have the same rank and pay as sergeants and corporals of infantry, respectively; and fifteen firemen, who shall rate as privates of infantry. The men comprising this division shall have, in addition to the usual requirements for enlistment in the "M. V. M.", such experience as mechanics, steam engineers, or firemen as shall fit them for their several ratings.

There shall also be a signal corps attached to headquarters of the naval brigade, which shall consist of one chief quartermaster, who shall have the same rank and pay as noncommissioned staff of infantry; two quartermasters, who shall have the rank and pay of sergeants of infantry, and eight enlisted men.

There shall also be attached to headquarters of the naval brigade a torpedo division, which shall consist of one chief gunner's mate, who shall have the rank and pay of noncommissioned staff of infantry, two gunner's mates, who shall have the rank and pay of sergeants of infantry, and ten seamen.

For all of the above forces the brigade commander shall be the recruiting officer, and they shall be uniformed and equipped as the commander in chief may direct.

To each company of the naval brigade there shall be one lieutenant, who shall be chief of company, one lieutenant, junior grade, and one ensign, who shall correspond in rank and pay with captains and first and second lieutenants of infantry, respectively, one chief boatswain's mate, two boatswain's mates, two gunner's mates, two quartermasters, two coxswains, one bugler, one bayman, and forty four seamen; and the minimum number of enlisted men shall be forty-one.

The chief boatswain's mate shall rank with a first sergeant, boatswain's mates and gunner's mates with sergeants, coxswains and quartermasters with corporals of infantry.

The seamen and bayman shall receive the same pay as enlisted men in companies of infantry.

The duty of the naval brigade may be performed afloat.

On the passage of this act all supernumerary enlisted men will be honorably discharged.

Officers affected by this act, now holding commissions, shall retain their rank and position until vacancies occur in their respective grades, but no further elections or appointments shall be had in such grades until the brigade is reduced to the number of officers allowed by this act

All acts and parts of acts inconsistent with this act are hereby repealed.

SEC. 2. This act will take effect on its passage.

NAVAL MILITIA OF RHODE ISLAND.

NAVY DEPARTMENT,
Washington, D. C., August 6, 1896.

SIR: In obedience to verbal instructions I have the honor to report upon the Naval Militia of Rhode Island as to their tour of duty at Gardiners Bay, Long Island, during the week of July 12 to July 18, 1896.

In June of this year the Department proposed that the States of New York, Rhode Island, and Connecticut have a joint camp of the Naval Militia at Orient Point, Long Island, with a view to formulating and carrying out a joint scheme of reconnoissance work of the shore line of the three States, especially that portion around the eastern end of Long Island Sound and the approaches to Narragansett Bay. A detailed examination of Orient Point subsequently developed its entire unfitness as a location for such a camp, and on the other hand Gardiners Island was found to have many ideal features. The owner, Mr. J. L. Gardiner, always most generous and public spirited, gave permission to use the western point as a camping ground, and the adjutants-general of the three States concerned were accordingly notified on July 3 of the proposed location of the camp on the island instead of Orient Point.

The tour of duty of the New York contingent was this year voluntary, and limited by State regulations to four days; so the Department made provision for transporting them by detailing navy-yard tug "*Nina*," which left New York on July 10 with the camp gear of the First Battalion, and, with four cutters in tow, proceeded to Gardiners Island, where camp was pitched on Saturday forenoon. The "*Dolphin*," with the Assistant Secretary of the Navy on board, arrived at Gardiners Island on the afternoon of July 11, and an hour or so later the "*Cincinnati*" and "*Montgomery*" came in. The "*Montgomery*" brought the officers and men of the First Naval Battalion of New York and landed them at a point near the camp which had been previously established for them by the "*Nina*." The "*Cincinnati*" brought the Naval Militia of Connecticut, with their entire camp equipment and boats, having left New Haven at noon The Connecticut Naval Militia were landed and pitched camp that night. The following day, Sunday, was spent in settling down in camp. At 5 p. m. the steamer "*Long Island*," chartered by the State of Rhode Island, brought over the Naval Militia of that State, together with their camp equipage and six boats. The Naval Militia landed their men and camp equipage in their boats from the steamer and pitched camp in a prompt and businesslike manner. This was their first experience in camping as a battalion, and, being at a season which conflicted most with the business interests of its members, the showing of the battalion in attendance and in camp work was most gratifying.

On Monday the Naval Militia of Connecticut were drilled on board the "*Cincinnati*" and the others on board the "*Montgomery*," the New York having the forenoon period and the Rhode Island the afternoon period. On Tuesday a special detail of officers and men from the three organizations reported to me on shore and were instructed in reconnoissance work in general, and with its special relation to the region around Gardiners Bay. This instruction was given by means of charts and drawings, by reference to the admirable work of the First Battalion of the Naval Militia of New York, and by a visit to several points on the island commanding views of the various actual and proposed signal stations on the adjacent shores of Long Island, Rhode Island, and Connecticut. Drills were carried on on board the "*Cincinnati*" and "*Montgomery*" with the Connecticut and Rhode Island battalions, respectively, and the New York Battalion had boat drill under sail. In the afternoon a most creditable review was given by the joint forces at 3.30 p. m. for the Assistant Secretary of the Navy, who was accompanied by his excellency the governor of Connecticut, the adjutant-general of Rhode Island, and a member of the governor's staff of the State of New York, all of whom arrived unexpectedly just in time to participate in the review.

Wednesday morning the "*Montgomery*" left for New York, taking on board the First Battalion and their camp equipage. The Naval Militia of Rhode Island were drilled on board the "*Cincinnati*" both in the forenoon and afternoon, and the Naval Militia of Connecticut were drilled on shore. Thursday morning the Naval Militia of

Connecticut reembarked on the *"Cincinnati"* for New Haven, and the *"Dolphin"* sailed for Newport. The Naval Militia of Rhode Island drilled in the forenoon on shore, and in the afternoon were taken by me on the tug *"Nina"* for a reconnoissance of Gardiners Bay.

Friday morning the Rhode Island camp was broken and all the remaining men and gear were embarked on the tug *"Nina,"* and with all the boats in tow crossed Long Island Sound to the Connecticut shore line. A reconnoissance was made of the south shore of Connecticut, enabling the Naval Militia of Rhode Island to recognize the various signal stations, actual and proposed, in this locality. The shore line of Rhode Island was skirted to Newport, where the Naval Militia were landed, with their equipage, at 3.30 p. m.

The attendance of the Rhode Island battalion was 13 officers and 96 men, distributed as follows: Bristol division, 4 officers and 37 petty officers and men; Providence division, 4 officers and 33 petty officers and men. Battalion commander was accompanied by 2 of his staff officers. This attendance was out of a total of 15 officers and 150 petty officers and enlisted men. The battalion has only been organized a few months, and under the command of Commander McCarthy Little, with the active cooperation of the State authorities, it promises to become a model organization. In September it is contemplated giving the battalion a limited instruction in automobile torpedoes, should a torpedo boat be available for the purpose. The earnestness of the battalion in the matter of reconnoissance work promises most useful results.

The joint camp was in every way a success. Each State carried out its plans and the Department fulfilled its obligations to the letter. Little attention was paid to camp routine. Each State force camped separately, and the idea was that camping was simply a means to an end, the end being to get together where ships could give them instruction and where mutual understanding could be arrived at on the subject of joint and systematic reconnoissance work.

Each State force got a better idea, also, of its needs as an organization, especially in the matter of equipments. The equipment of naval militia organizations must of necessity be very much more complicated and expensive than that of the land militia. The question of the saving in weight is a vital one. The Sibley tent (conical, with low walls) which was used by the Naval Militia of New York seems to be the type best adapted for the Naval Militia, as was also their cooking outfit. The commissariat arrangements of the States of Rhode Island and Connecticut were quite satisfactory, but were entirely too cumbersome. The new appropriation for the Naval Militia permits the purchase of signal outfits and pulling boats and their equipments. Unquestionably the basis of the equipment of the Naval Militia should be the pulling cutter as a unit. All camping and signal outfits, and all arms and accouterments, should be based upon the distant-service equipment of a pulling cutter in the Navy, and immediate steps should be taken by the Naval Militia of all the States to complete their equipment in this respect before branching out in other directions.

The Naval Militia of Rhode Island was originally organized on the basis of a torpedo and artillery corps. Their proximity to the torpedo station at Newport will make it feasible for specialists to become proficient in respect to torpedoes, but it is probable that the battalion organization, which has been recently perfected, will result in the militia of this State becoming, as in others, much wider in its purposes than originally contemplated.

While the Naval Militia owes a dual allegiance to the State maintaining it and to the General Government, it must depend for its success upon strong local and State support, as well as upon the enthusiasm and patriotism of its members.

The laws and regulations governing the Naval Militia vary in each State, and it would seem, therefore, that the organizations would also vary and be what the State authorities choose to make of them. This is counteracted more or less by the interest which the Navy Department takes in them from their somewhat national character, and from the fact that the annual appropriation made by Congress standardizes, more or less, their equipment. Being local, the Naval Militia have all the functions of a State naval force, and the Navy Department strives, by issuing text-books and bringing them in contact with the regular service on board ship from time to time, to throw about them a naval atmosphere. It is from this dual character that the Naval Militia movement has suffered, on the one hand, from a mistaken idea of their becoming a national reserve force of officers and men for the Navy, and consequently, on the other hand, from a lack of promise of definite usefulness to the States maintaining them. Naturally, it is not the business of a State to provide such a reserve, and, on the other hand, it is distinctly the duty of the General Government. Fortunately, the organization of a true naval reserve under national auspices can not affect unfavorably the growth and development of the Naval Militia.

As a State naval force, the Naval Militia has a very wide field to cover, and nothing is more urgently needed than a limitation of the expectations which both the State and General Government seem to have concerning the Naval Militia. Their State inspectors are, *as a rule, entirely inexperienced* in nautical matters, and on the

men-of-war, on board of which they occasionally serve, each board of officers applies its own standard to them in estimating their efficiency. While the State and the Government both have a right to expect one dollar's worth of efficiency for every dollar spent in their maintenance, the first duty of the Naval Militia is really to the State. Undoubtedly in time of war a large percentage of the Naval Militia will individually volunteer for service in the Navy, taking such positions as their merits alone will give them.

The Navy as a body seems to hold to the idea that Naval Militia officers will want to go into the service in time of war with the rank they now hold in the Naval Militia. This view is alike fatal to both organizations as affecting their mutual relations. As a matter of fact, the rank given in the Naval Militia is a State affair and in no way concerns the Navy. A man may be a most excellent Naval Militia commander without necessarily being fit to command a man-of-war. In time of war the demand for officers and men will be such that the actual supply from all sources will be so entirely inadequate that no officer holding a commission in the Navy need fear that his particular talents will be discounted in favor of Naval Militia officers of less experience.

A necessary step in this question will be furnished with the enactment of laws establishing a true reserve of officers and men for the Navy.

The joint camp at Gardiners Island has given the Naval Militia organizations of the three States participating a clear and intelligent idea of what may be accomplished in the way of reconnoissance work in this immediate region. The tours of duty this year of the Naval Militia have in general been more fruitful than those of previous years, because the purpose of the Naval Militia is becoming more clearly understood. The State authorities in most States show every desire and intention of sanctioning and developing the reconnoissance work of the Naval Militia, and it will soon become a part of their State duties as distinguished now from being the result only of voluntary and individual action on the part of enthusiastic and zealous members. The results promise to give purpose to the Naval Militia movement and, incidentally, to give the Department a vast fund of military information of the utmost value in formulating schemes of defense.

Very respectfully,

A. P. NIBLACK,
Lieutenant, United States Navy.

NAVAL MILITIA OF CONNECTICUT.

U. S. S. CINCINNATI, SECOND RATE,
Tompkinsville, N. Y., July 19, 1896.

SIR: In obedience to your order and instructions pertaining to the same, we have the honor to make the following report on the Connecticut Naval Militia, which was attached to this ship for instruction and drill from July 11 to July 16, inclusive.

CHARACTER AND SCOPE OF THE DRILL AND INSTRUCTION GIVEN.

On board ship.—Drill at main and secondary battery; subcaliber practice; fire quarters; collision quarters; boat drill; night signals with search lights, Ardois and Very systems. The battalion witnessed the firing of three Whitehead torpedoes.

On shore.—Pitching and striking camp; signals, including the building of signal stations; field artillery; infantry drills, including brigade, battalion, and company drills; extended order drill by companies; dress parade, guard mount, and the general routine of camp life.

PERCENTAGE OF ATTENDANCE.

Average attendance at drills for past year.—New Haven division, officers, 100 per cent; men, 93 per cent. Hartford division, officers, 100 per cent; men, 92 per cent

FORM OF ORGANIZATION.

The organization is based upon that of a battalion. Four divisions are allowed by law, three of which—two line divisions and one engineer division—have been organized. The battalion is commanded by a commander and the following officers: One executive, with rank of lieutenant-commander; 1 navigator, with rank of lieutenant; 1 surgeon, with relative rank of lieutenant (junior grade); 1 paymaster, with relative rank of lieutenant (junior grade); 1 ordnance officer, with rank of lieutenant (junior grade); 1 adjutant, with rank of ensign.

The two line divisions are each commanded by 1 lieutenant, 1 lieutenant (junior grade) and 2 ensigns; the engineer division by 1 chief engineer, with rank of lieutenant, and 1 assistant engineer, with rank of ensign.

A hospital corps is being organized.

The New Haven division mustered on board 4 officers and 78 men, 8 being absent with leave.

The Hartford division mustered on board 4 officers and 42 men, 9 being absent with leave; other absentees were the executive and the paymaster.

PROFESSIONAL KNOWLEDGE.

Drills on board.—The officers and men showed a fair theoretical knowledge, and with the excellent intelligence and zeal manifested would quickly become thoroughly efficient with opportunities for drill. The unusually good showing at subcaliber practice was particularly noticeable.

Drills on shore.—The board fails to understand why the drills on shore should be in any way inferior to what may fairly be expected from such excellent material. We are led to believe that the impression exists in the Naval Militia that precision and neatness are not requisite parts of a seaman's training. The infantry manual was ragged and the marching poor. The rifles were rusty, the men's belts were too large, the shoes were much worn and in most cases unsuitable to the character of the duty, and the appearance of the men when in white working clothes was slouchy. These faults, though serious and even radical, could easily be corrected, and are due, it is believed, to a misapprehension of the desirable characteristics of a seaman. The drummers and buglers need practice.

DISCIPLINE.

The discipline is good.

UNIFORM.

Each man is provided with the following articles of uniform and outfit, for which he is responsible: 1 full-dress jacket, 1 blue trousers, 2 white working suits complete, 1 watch cap, 1 jersey, 1 rubber poncho, 1 pair leggings, 1 blue overshirt, 1 flat cap, 1 white hat, 1 peacoat, 1 knife and knife lanyard, 1 hammock, mattress and blanket, 1 webbed cartridge-belt.

The boatswain's mates with boatswain's calls.

The uniforms are made at the navy-yard, New York, and are of good quality and cut. The appearance of the men has already been referred to. It may be added that the officers, while zealous in the performance of their other duties, are slack in enforcing neatness and uniformity of dress among their men.

CLASS OF MEN COMPRISING THE ORGANIZATION.

The following is an analysis of the occupations of the officers and men:

Occupations.	New Haven division.	Hartford division.
Clerks	31	21
Students	16	1
Salesmen	8	1
Bookkeepers	5	5
Boat builder	1	.....
Merchants	1	2
Lawyers	7	.....
Printer	1	.....
Tailor	1	.....
Carpenter	1	.....
Civil engineers	1	1
Mechanical engineers	2	1
Instructors	2	.....
Pressmen	2	.....
Clock fitter	1	.....
Draftsmen	2	2
Correspondents	.....	3
Contractor	.....	1
Master mechanic	.....	1
Purchasing agents	1	1
Physicians	1	2
Superintendents	.....	2
Chemist	1	.....

NUMBER THAT HAVE SERVED IN THE NAVY.

New Haven division, none; Hartford division, 2 graduates of the Naval Academy both officers), 3 not graduates.

PROBABLE FIELD OF USEFULNESS, AND AVAILABILITY IN TIME OF WAR.

The men of this organization, with the training they have received and their high order of intelligence, would be of value on board vessels of the Regular Navy when enlisted for general service; also as a separate body, under their own officers, to man the auxiliary cruisers, harbor defense, torpedo, picket, and dispatch boats. They form a nucleus from which the organization can be largely extended and increased. Even if these men went into the volunteer forces, their training would make them of value to the country in time of war.

Their availability is shown by the following two questions, which were asked every man in the battalion after breaking camp:

No. 1. Number of the men who would volunteer for general service in the Navy in time of war, retaining their division organization as far as possible, subject to exigencies of the service.

No. 2. Number of men who, on declaration of war, would join the Navy on the same footing as enlisted men, with a view to seeing foreign service.

The answers to which were as follows: New Haven division, No. 1, 90 per cent; No. 2, 50 per cent. Hartford division, Nos. 1 and 2, all except 1 man, marked doubtful, answered, "Yes."

That the men composing the organization are not a shifting element is shown by the following statements obtained from the muster rolls:

NUMBER WHO HAVE BEEN IN THE NAVAL MILITIA.

Two years, officers, 4; men, 33. One year, officers, 0; men, 330. Six months, officers, 0; men, 12.

Number of men who become tired of the organization and leave soon after joining—say after two or three months—none.

The camp was well and regularly laid out and kept in good condition. The medical and ambulance outfit was practically good. The tents were of poor quality, affording little protection in heavy rains. The commissary was very good, being done by contract, and, with the exception of a delay on the night of landing, was very satisfactory. In conclusion, the board wishes to testify to the zeal and energy of both officers and men of the organization and the universal desire of its members to profit by instructions. The Hartford division, although having been mustered in only three weeks, made an excellent showing in regard to organization, drills, and adaptability to the work required. Much valuable time was lost, due to the lack of a regular system governing the drills and exercises, but this was not the fault of the militia officers.

Respectfully submitted.

C. A. GOVE, *Lieutenant, U. S. N.*
HARRY P. HUSE, *Lieutenant, U. S. N.*
ROGER WELLES, Jr., *Lieutenant, U. S. N.*

The COMMANDING OFFICER.

NAVAL MILITIA OF NEW YORK.

U. S. S. MONTGOMERY,
Tompkinsville, Staten Island, July, 1896.

SIR: In obedience to your order of July 3, we submit the following report on the Naval Militia of New York as observed by us during their recent tour of duty with which this ship was connected.

A camp was established at Gardiners Island by a small detail sent in advance. The remainder of the men who performed duty were transported to the camp from New York City, and the entire number transported back to New York from camp on board this ship. These men were not ordered out, but were volunteers for this tour of duty. The party transported to camp on Saturday, July 11, consisted of three officers, three petty officers, and forty seamen, under the command of Lieutenant-Commander G. E. Kent, of the New York Naval Militia. The party transported from

camp on Wednesday, July 15, consisted of three commissioned officers, three chief petty officers, six petty officers, forty seamen, and twelve members of the drum corps (unenlisted) under the same commanding officer.

During the passages to and from Gardiners Island the Militia were given such instruction as was desired by the officer in command. This consisted of an inspection and explanation of the entire ship, with especial attention paid to the ground tackle, water-tight subdivision and doors, appurtenances for the safety of the ship, magazines and ammunition supply, and the guns and torpedoes; opportunity was also offered for inspection of the engines and fire rooms. For this purpose the men were divided into small details, which were sent about in charge of leading petty officers of the ship. They were also given short drills at the battery. Instruction in their respective duties was given to special petty officers and details, such as the boatswain's mate, yeoman, apothecary, chief quartermaster, and signalmen. The officers were shown about by the officers of the ship, and in addition each spent some time on the bridge or on deck observing the manner of carrying on duty and the methods used by the navigator in coasting, taking bearings, plotting positions, etc. Instruction in the compensation of the compass was given the officers by the navigator.

On the morning, Monday, July 13, the men of the New York Militia came on board ship at Gardiners Island. Each man was given a mate of appropriate rating from the men of the ship to be instructed by him in his individual duties at fire quarters, abandon ship, and collision drill, and all of these drills were carried out, the militiamen going with their mates and performing the duties with them. At abandon ship no boats were lowered, but they were completely provided in accordance with the bill. After these exercises the militiamen were all given an opportunity for subcaliber practice at either the 5-inch, 6-pounder, or 1-pounder guns, the targets being placed about 300 yards from the ship. Many excellent shots were found among them.

On the night of Monday, July 13, a detail of men from the New York Naval Militia came on board and were given instruction in night signaling with the electric night signals, search lights, lanterns, and Very's lights.

The professional knowledge of the force, as far as our observation gave us opportunity to form a judgment, is very creditable and quite as advanced as can be expected, though not by any means complete. Their boats were fairly well handled. Their signaling by the wig-wag code was well done. On shore their battalion presented an excellent appearance. At gun drill they were intelligent, quick to learn new points, and retentive of such information as they had gained in previous service with the Navy. Speaking generally, they showed a zealous spirit and a very creditable knowledge in matters in which they have had opportunities for drill and instruction.

The uniform in which the officers and men appeared seemed serviceable and fitting. The uniform of the officers is a close copy of the service uniform of the Navy, but with gold stripes and special devices. The uniform of the men was in blue and white, that of the enlisted men of the Navy, excepting that of the chief petty officers, which approached more nearly that of commissioned officers than in the Navy, and the wearing of the obsolete white hat. Laxity was observed in the uniformity of the head gear, some few men wearing watch caps, while the majority wore white hats.

The proficiency of the petty officers in their ratings was good, in some cases excellent, and in general better than that of the enlisted men. Among the latter were a considerable number of recruits, which tended to lower the average efficiency.

The probable field of usefulness in time of war would be local, in such work as the manning of harbor-defense vessels and torpedo boats, mining operations, establishing and keeping up lines of communication with the fleet by signals or fast vessels, and perhaps the manning of coast-defense batteries. In all such work they could retain to a considerable degree their own organization and serve with their own officers, even though under the direction of regular officers; and, moreover, their local knowledge would be of great service. We do not believe that good results would ensue from any attempt to fill out the complements of naval vessels from the ranks of the militia by splitting up their own organization, beyond the mere gaining of recruits who have had some previous military and naval training. Should, however, it be deemed necessary to draft the militiamen into the regular service, we consider that it would be the best policy to send units of not less than a division, rather than individuals. Their availability would also be greater in the vicinity of their homes.

* * * * * * *

Very respectfully,

C. H. LYMAN, *Lieutenant, U. S. N.*
H. S. KNAPP, *Lieutenant, U. S. N.*
C. T. JEWELL, *Ensign, U. S. N.*

Commander R. B. BRADFORD, U, S. N.,
Commanding U. S. S. Montgomery.

NAVAL WAR COLLEGE,
UNITED STATES NAVAL STATION,
Newport, R. I., August 3, 1896.

SIR: I have the honor to report that in obedience to the Department's order of July 14, 1896, I accompanied the Second Separate division of the Naval Militia of the State of New York on its annual camp July 19 to 26, inclusive.

The division assembled at the Rochester armory at 5.30 a. m. July 19, and at 7.30 reached Charlotte, where a small steamer had been chartered to convey the division, their camp equipage, and boats to the camp selected at Chaumont Bay. The site of the camp had been chosen during the preceding week by Ensign Leary, of the division, who, with three men, had proceeded there in a steam launch, taking with them six tents, which the division found ready for use upon their arrival. This forethought on the part of Lieutenant Walbridge, commanding the division, was extremely fortunate, as the camp was reached at 9.30 p. m., and by the time the camp equipage was ashore a rainstorm had set in.

The division is fitted out extremely well. They have a steam launch, two cutters, three whale boats, and a dinghy, all in excellent condition, and were well provided with oars, sails, etc. The last legislature appropriated $8,000 for a boathouse and armory to be built at Charlotte for the use of the division. They hope to occupy it by October 1. They have two 3-inch B. L. howitzers and one 1-pounder Hotchkiss, with field carriages. The latter has in addition a cone for mounting in boats. They are armed with the .45-caliber Hotchkiss rifle and have a complete outfit of haversacks, knapsacks, canteens, etc.

Uniform.—The division is well provided with uniforms. Each man has two suits of working clothes, one suit of blue dress, one suit of white dress, one pea coat, one blanket, one rubber poncho, one suit of oilskins, one blue cap, one watch cap, and one white hat.

Attendance.—The division at present consists of 4 officers and 68 petty officers and seamen. All of the officers and 78 per cent of the men were in attendance. Most of the absentees had been excused for satisfactory reasons.

Discipline.—Excellent. I was most agreeably surprised at their ready obedience and the cheerful manner in which men unaccustomed to hard manual labor performed the most laborious work.

Form of organization.—The division is organized as an infantry company, and an effort has been made to organize it into a ship's company, using as a basis the watch quarter and station bill of the U. S. S. *"New York,"* a copy of which was obtained by Lieutenant Walbridge when on board that vessel with his division in 1894. If the division can obtain another 1-pounder howitzer it might do excellent service as a battery of artillery.

Character and scope of drill and instruction.—The drill and instruction were confined almost entirely to handling the boats under oars and sails. Boat expeditions were made during the week to Grenadier Island, Henderson Bay, Sacketts Harbor, Chaumont, and Three Mile Bay. The site of the camp was selected with a view of transporting the boats across a narrow isthmus only 40 yards wide and launching them on Lake Ontario, but the low water in the lake lengthened the portage to 200 yards. One cutter was sent around a distance of 20 miles and hauled up on the lake side of the beach and subsequently used for expeditions to Grenadier Island and Henderson Bay. As an experiment, one cutter was hauled out on the beach, capsized, and with 38 men she was picked up and carried a distance of 40 yards without trouble. One day was spent in taking division to Madison Barracks, Sacketts Harbor, where, through the kindness of Colonel Lyster, commanding the Ninth Infantry, the officers and men were given an opportunity to inspect the Regular Army at drill and in barracks.

Professional knowledge.—Generally fair. The officers are extremely well informed, considering the fact that none of them had ever been in the naval service.

Efficiency in various ratings.—Very good. The quartermaster and 6 signal men were quite expert in sending and receiving messages with the Myer code. The boatswain's mates and coxswain's mates were very zealous, and the improvement in the latter's handling of their boats after the week's work was very marked.

Probable field of usefulness and availability in time of war.—This division is the only Naval Militia organization on Lake Ontario. * * * All of the officers and most of the men are familiar with the river, and in case of hostilities I think the division would render excellent service.

Class of men composing the organization, and number who have served in the United States Navy.—The division is composed of merchants, clerks, and artisans in about equal proportions, with a few professional men. They are all of a high order of intelligence and excellent physique. There is no one in the division who has had any previous naval service.

Very respectfully, your obedient servant,

MARBURY JOHNSTON,
Lieutenant, United States Navy.

The SECRETARY OF THE NAVY.

NAVAL MILITIA OF NEW JERSEY.

U. S. S. RALEIGH,
Tompkinsville, N. Y., July 22, 1896.

SIR: In obedience to the appended order marked * * * we have witnessed the drills of the Battalion of the West, New Jersey Naval Militia, and have the honor to report as follows:

Parts of this battalion came on board off League Island, Pa., about 10 a. m., and remained until about 4.30 p. m., for four days, viz, July 13, 14, 15, and 16, except that on the 15th they remained until noon only. Our steam launch carried the officers and towed the men of the battalion, in their own boats, to and from the *"Ajax."*

The officers and men of this battalion were instructed by our officers in the nomenclature of the ship; the uses of the various wheels, winches, pumps, pipes, manifolds, valves, and mechanical appliances; the method of stowing and supplying ammunition; the method of flooding, ventilating, and draining magazines and shell rooms; the method of closing shot holes, of closing water-tight doors and hatches, of hoisting, stowing, rigging out, lowering, detaching, and manning boats, and such other details as might suggest themselves, including instruction in making knots, bends, hitches, bending hawsers together, etc.

They were drilled in the manual with small arms; in the manual and firings with revolvers; in casting loose, providing, loading, pointing, and firing main and secondary guns; broadswords; aiming drill; wigwag and flag signals, and boats under oars and sails. The surgeon's and paymaster's contingents were instructed in their duties by the appropriate officers and petty officers of this ship.

The percentage of attendance was as follows:

Day.	Officers.	Men.
	Per cent.	*Per cent.*
First	44	15
Second	19	13
Third	19	14
Fourth	19	7
Whole time	25	13

Whole battalion for whole time, 14 per cent, strength of battalion, 16 officers and 157 men; total, 173.

The organization is supposed to be that of a ship, and is a battalion of three divisions, the first belonging to Trenton, the second to Haddonfield, and the third to Camden. The following are not attached to any division: One commander, 1 lieutenant-commander, 1 lieutenant, 1 surgeon, 1 assistant surgeon, 1 paymaster, 1 chief master at arms, 1 pay yeoman, 1 apothecary, and one chief quartermaster.

The professional knowledge of members of this battalion is, judging from those present for drill, extremely limited. There are no seamen in the battalion, except, perhaps, Commander C. B. Dahlgren, who is said to have served as a line officer in the volunteer navy during the war of the rebellion. Commander Dahlgren and his next in rank, Lieut. Commander E. S. Davis, did not report on board for drill. The latter came on board upon our arrival and arranged for the drills. Several of the men have picked up a slight knowledge of knots, bends, and hitches. All have learned something of boat work, while a few are fairly proficient. They have evidently made good use of the boats of the *"Ajax."* The chief quartermaster and a master at arms, first class, are fairly proficient in wig wag signals, being able to send and receive messages rapidly. All the men have not been required to learn signals, and the officers have not learned them. This we consider very unfortunate, believing, as we do, that every line officer and every man of the seaman branch should be able to read and transmit messages by signals.

So far as we can judge, the discipline of this battalion is good. The men are not particularly well set up, but they appear to be willing, strong, and healthy—due no doubt to the fact that physical examination is required before enlistment. The officers are naturally somewhat diffident in giving commands on drill, but this defect will probably be remedied by further knowledge and experience.

The uniform for officers is the same as our service dress, except that the State shield is worked into the cap device and the blue trousers have no one-half inch stripe down the outer seams. The officers were all in proper uniform, and they wore their uniforms properly.

The enlisted men have blue uniforms with grommet caps and white working suits. These are similar in all respects to the Navy uniforms, except that the cap ribbon is marked *"N. R. AJAX. N. J."* The men were in good clean uniforms and each had a

knife lanyard with knife attached. We noticed, however, that several of the men wore tan-colored shoes. The uniforms are furnished by the State.

The officers and petty officers are, generally, the best men in the battalion. They, however, know but little as yet of the specific duties of their ranks or ratings, but would become fairly proficient under proper instruction.

We regret to say that only two members of the battalion have ever served in the Navy, viz, Commander Charles B. Dahlgren, five years in the line, Volunteer Navy, and Lieut. Commander Eugene S. Davis, ten years a pay clerk in the Navy. The former no doubt is out of touch with the modern Navy, while the latter—there being no royal road to our profession—was never in touch with the Navy, old or new, and must at times find his ingenuity sorely taxed in trying to sustain the fiction of being a sailor officer. The foundation should be properly laid. Erroneous ideas and long disused methods should be eliminated in training the Naval Militia. For this reason we recommend that the initial training, at least, be under the immediate supervision of a line officer who is in close touch with the modern Navy.

The officers and men, with few exceptions, appeared to be interested in the drills and instruction and to learn readily. Officers, under supervision of our officers, drilled their men very creditably at great guns, broadswords, and revolvers. Each officer and man got a good idea of aiming drill and of its importance in developing marksmen. Boat work was very good. The small-arm (.45 caliber Hotchkiss rifle) drill was not good. In all our work with the Naval Militia this year we have omitted the firings, because none were familiar with bolt guns—being armed with Springfields. It is but fair to state that few were present on the day of this drill, and that they were formed in one squad, and consequently some of them were not under their own divisional officers. It is to be regretted that they have been using the Army instead of the Navy drill instructions, not having obtained a copy of the latter until very recently.

The Naval Militia of New Jersey appears to be greatly hampered by lack of support from the State. No money was appropriated by the State for pay of officers and men while on the annual cruise or for their maintenance. Those that reported for drills, therefore, did so without pay and at their own expense. The first (Trenton) division put in their cruise on board the "*Ajax*" between the 1st and 9th instants, and did not return for drill on board the "*Raleigh*." These facts show why there was such a low percentage of attendance.

The class of men composing the battalion is shown as follows:

Occupation.	Number.	Occupation.	Number.
Dentist	1	Students	5
Tradesmen	10	Mechanical engineers	5
Clerks etc	48	Painters, etc	13
Contractors, etc	3	Machinists	11
Carpenters	5	Mechanics	5
Skilled laborers	36	Barbers	2
Blacksmiths	5	Tailor	1
Printers, reporters	7	Plumber	1
Baker	1	Civil engineer	1
Physicians, surgeons	2	Druggists	3
Lawyers	2	Manufacturer	1
Laborers	2	Butchers	2
Rigger	1	Total	173

The average ages are: Officers, 33 years; men, 24½ years.

It will be seen by an inspection of the foregoing that the Battalion of the West, Naval Militia of New Jersey, is composed of a class of men that will be suitable for naval service in time of war. The length of enlistment is five years. Many would, no doubt, enlist in the Navy at the outbreak of war. In our opinion, its usefulness as an organization is limited to a participation in the defense of Delaware Bay and River, and to maintaining communication between the fleet and the shore by signal and otherwise.

Respectfully submitted.

J. M. BOWYER, *Lieutenant, U. S. N.*
W. F. FULLAM, *Lieutenant, U. S. N.*
GEO. F. COOPER, *Ensign, U. S. N.*

The CAPTAIN, COMMANDING.

U. S. S. MONTGOMERY, THIRD RATE,
Tomkinsville, Staten Island, July, 1896.

SIR: In obedience to your order of July 3, we respectfully submit the following report on the Naval Militia of New Jersey from our observation of the Battalion of the East on July 16 and 17, on which dates details came on board this ship at Hoboken for drill and instruction.

This duty performed by the Militia was entirely voluntary, in view of the fact that the battalion is to make a cruise in the "*Portsmouth*" toward the end of this month, and the men could not be spared from their ordinary pursuits for any longer time. The details came on board in the late afternoon, after business hours, and received such instruction as could be given in the limited time.

On both days the commanding officer of the battalion, Commander Irving, New Jersey Naval Militia, was present with his men, and the character of the instruction was referred to him and given in accordance with the wishes he expressed. As the organization is a recent one and has had no previous experience with naval vessels, the work on both days consisted for the most part of instruction and drill at the battery. All the guns and their mounts were thoroughly explained as regards their working, and short drills were also given. The men were not the same on both days, which necessitated a repetition on the second day of the first day's work. In addition to the work at the guns on the second day, those who had been on board the day before were shown about under the guidance of the ship's petty officers and given as much general instruction as time permitted. On both days a detail from the engineer's division and its commanding officer came on board and were shown through the engine and fire rooms by the engineer officers of the ship, and instructed in the routine duties and management of the engines and boilers at sea. On the evening of July 17, 2 petty officers and 8 men were instructed on board in night signaling, using the electric night signals and search lights for the purpose. Six officers and 44 petty officers and men, including 1 officer and 23 men of the engineer division, were on board the first afternoon, July 16; on the next afternoon 11 officers and about 30 men, including 1 officer and about 15 men of the engineer division, were on board. Eleven officers and about 60 men were on board on one or both days.

The professional knowledge of the men who came under our observation was not advanced. Under the circumstances, however—the youth of the organization, the antiquated material with which they have to do, and the fact that they have never before served on board a man-of-war—they made a very creditable showing and gave promise of improvement with longer service and better opportunities. Recently the men, after business hours, have been engaged in assisting the riggers who have been fitting standing and running rigging on the "*Portsmouth*."

The uniform of the officers is a close copy of the naval-service uniform. That of the men whom we saw was the white overall uniform of the Navy. Laxity was observed in the uniformity of head and foot gear, some men wearing watch caps instead of white cap cover worn by the majority, and some wearing yellow shoes.

Very limited opportunity was offered for observing the proficiency of the petty officers, for almost the entire work was as new to them as to the men under their charge. The coxswains showed lack of experience in handling their boats in the strong tideway, but they handled their men very well, as did the other petty officers. In view of their short service, we do not consider the lack of proficiency of petty officers or men as at all discreditable, but only what was to be expected. The spirit shown by all was admirable.

The probable field of usefulness in time of war would be local, in such work as the manning of harbor-defense vessels and torpedo boats, mining operations, establishing and keeping up lines of communication with the fleet by signals or fast vessels, and perhaps the manning of coast-defense batteries. In all such work they could retain to a considerable degree their own organization and serve with their own officers, even though under the direction of regular officers; and, moreover, their local knowledge would be of great service. We do not believe that good results would ensue from any attempt to fill out the complements of naval vessels from the ranks of the militia by splitting up their own organization, beyond the mere gaining of recruits who have had some previous military and naval training. Should, however, it be deemed necessary to draft the militiamen into the regular service we consider that it would be the best policy to send units of not less than a division, rather than individuals. Their availability would be also greater in the vicinity of their homes.

* * * * * * *

Very respectfully,

C. H. LYMAN, *Lieutenant, U. S. N.*
H. S. KNAPP, *Lieutenant, U. S. N.*
C. T. JEWELL, *Ensign, U. S. N.*

Commander R. B. BRADFORD, U. S. N.,
Commanding U. S. S. Montgomery.

NAVAL MILITIA OF PENNSYLVANIA.

U. S. S. INDIANA,
Tompkinsville, Staten Island, July 23, 1896.

SIR: In obedience to your order of the 20th ultimo, we have the honor to make the following report concerning the recent tour of duty of the Pennsylvania Naval Militia on board this vessel:

The "*Indiana*" anchored off the Delaware Breakwater about 7.30 a. m. on the 11th instant; the militia came down the bay in two ice boats belonging to the city of Philadelphia, and anchored inside the breakwater about 5.30 on the morning of the 15th instant. They had embarked at Philadelphia on the evening of the 10th and had proceeded down the river on the 11th.

The Pennsylvania Naval Militia is composed of two divisions, forming one battalion from the city of Philadelphia, and is attached to the First Brigade of the National Guard of the State; another division comes from Pittsburg, and is attached to the Second Brigade of the State Militia.

The Philadelphia battalion, consisting of 22 officers and 86 men, were embarked on ice boat No. 3, and the Pittsburg division, consisting of 66 officers and men, were embarked on ice boat No. 2; former boat being commanded by Lieutenant-Commander Breed, and the latter by Lieutenant Stout, while Commander Brown, of the Philadelphia battalion, was in chief command, the Pittsburg division being temporarily placed under his order.

They proceeded slowly down the river and anchored off Newcastle, where they were inspected by the State inspecting officer on the 14th. On this occasion they were paraded as follows: One Philadelphia division and the Pittsburg division as infantry, and one Philadelphia division as artillery.

On arriving at the breakwater, Commander Brown and the two officers in command of the boats reported on board in the forenoon, and in the afternoon all the officers came on board and were instructed and drilled in the exercise of the 6-inch guns and instructed in torpedo work and general duties. In the evening of the same day many of the officers and men came on board and were instructed in night signals and the operation of search lights. The following morning, Thursday, the men were divided in two parts and drilled at the 6-inch and the 6-pounder guns, and in boats under oars, three of the ship's cutters and the boats belonging to the Militia being used, a naval cadet, a coxswain, and a competent man for stroke oar being sent in the boats; and in the afternoon the same drills were carried on, changing the parts, and the signalmen were drilled at signals.

The gun drills were conducted by the Militia officers themselves, under the general supervision of the divisional officers of the ship.

On Friday the whole force came on board for target practice with the ship at anchor. A regulation great-gun target was planted at 1,000 yards, and 10 shots were fired from the 6-inch guns and 48 shots from the 6 pounders by the first and second captains. It had been the intention to fire about twice this number of shots, but the presence of a large number of sailing craft in all directions made it impossible to fire any shots after dinner.

The marksmanship shown during the practice was remarkably good, several of the shots hitting the target, and but few would have missed a target the size of this ship.

In the afternoon three torpedoes were fired at floating targets.

After this practice the forces were embarked in boats and returned to their vessels, and the "*Indiana*" soon got under way for this anchorage. It was the purpose of the commanding officer of the militia to get under way that evening and proceed to an anchorage off Cape May, where he would land the force as a Naval Brigade on Saturday. This was the suggestion of the State inspector.

After the tour of duty on board this ship, and from the knowledge gained from the officers and men at drills, and the inspection of the muster rolls of the organization, we find as follows:

(*a*) *Character and scope of instruction given.*—Each man is furnished by the State with a Springfield rifle, leather cartridge belt, rubber and woolen blanket, haversack, and canteen. The Navy Department has supplied the divisions with boats and wigwag flags; and the Philadelphia battalion has been furnished with two howitzers, with field carriages. The drills carried on are those that can be conducted with the means above indicated, but as the Pittsburg division has only one cutter, their instruction in boat work has necessarily been limited, and the greater portion of their time has been devoted to infantry and signal drills.

(*b*) *Percentage of attendance.*—At the State inspection and on this tour of duty all the men enrolled in the State Naval Militia were present, the percentage of attendance being reported as 100 per cent, all those not reporting for duty having been dropped from the rolls and the vacancies filled by enlistment.

(c) *Form of organization.*—We have outlined the general features of the organization. The details are as follows:

Division A, Philadelphia, is composed of 5 officers and 51 men, the commanding officer being Lieutenant Stout, a graduate of the class of 1883 of the Naval Academy.

Division B, Philadelphia, consists of 1 officer and 65 men, under the command of Lieut. (J. G.) A. W. Russell, a graduate of the University of Pennsylvania.

The Pittsburg division, composed of 5 officers and 75 men, is commanded by Lieut. (J. G.) W. B. Ewing, a physician and civil engineer, who has had eleven years experience in the State National Guard.

All of these divisions are organized more as a ship's company than as an infantry company, men holding such rates as master at arms, boatswain's mate, gunner's mate, quartermaster, coxswain, etc., no one holding a lower rate than that of seaman.

(d) *Professional knowledge.*—Considering the time that many of the men have been members of the organization and the limited means at the disposition of the officers, we are of the opinion that the knowledge of the body as a whole is all and more than could be expected.

The commander has been an enthusiastic yachtsman for many years, and is at present the commodore of the Philadelphia Yacht Club, and possesses an intimate knowledge of the local waters and the management of boats that would be most requisite for the Militia. Of the other senior officers, two have served in the United States Navy with credit, and many more have served in the National Guard, and have fitted themselves admirably for the duties of commanding officers, as far as they understand them. Nearly all the officers are college graduates and professional men, and show great zeal and earnestness in their work. The men also showed that they have been very attentive, and in their work on board gave every evidence of having learned much in the way of handling boats and the smaller guns, and in signals showed themselves to be quite proficient as far as wigwag signals are concerned.

Discipline.—In this particular the force seems to have been very well grounded, and the effects of the training were seen on every hand, whether drilling at the guns or in the boats or moving about the deck. The respect paid by juniors to the orders of all seniors was everywhere marked.

(f) *Uniform.*—The uniforms of the men as furnished by the State are practically the same as those furnished by the Government to our own men, viz, overcoat, blue suit, overalls, cap, and white hat. The officers furnish their own uniform, which is about the same as our service dress, the only changes being gold lace instead of mohair on the sleeve and the "Keystone" being an additional collar ornament.

(g) *The organization is made up as follows.*—Division A, of Philadelphia, and the Pittsburg division are made up almost entirely of men of good education, engaged in clerical pursuits, and have taken degrees as lawyers, civil engineers, or bachelors of science. Division B, of Philadelphia, has been recruited mainly from Cramp's and other shipyards along the banks of the Delaware, the following trades being represented: Machinist, electrician, draftsman, pattern maker, ship joiner, blacksmith, molder, and many others always found in a large shipbuilding establishment. Of the entire number we find that 4 have served in the United States Navy, 3 in the apprentice ship "*Saratoga*," and 15 in the Pennsylvania National Guard before joining the Naval Militia.

(h) *Probable field of usefulness and availability in time of war.*—In this connection we are decidedly of the opinion that they would find no place on a regular man-of-war on the open sea, or in the outer line of coast defenses, but would be of incalculable use and benefit in the inner or mobile defenses. Without going into a detailed plan of defense of the coast, we will enumerate a few of the many auxiliaries that would be indispensable in time of threatened attack. First in importance come the lookout and signal stations, connected with each other and the whole seaboard by telegraph and telephone cables and wires. All of the work of these stations could be most efficiently carried on by a well-drilled Naval Militia, and as such station should be provided with two or more rapid-fire or machine guns for its own protection or mutual support, knowledge of gun drill would be requisite.

In addition to this duty, there would be duties on vessels of various types forming the mosquito fleet that could very properly be delegated by the Regular Navy to a competent adjunct in the shape of the Naval Militia. Steamers fitted out as torpedo boats, rams, dredges, wreckers, colliers, telegraph cable layers, picket boats, inshore scouts, floating repair shops, torpedo depot ships, hospital ships, transports in local waters, vessels equipped for removing or placing buoys, laying or countermining mines, obstructing or clearing channels—all could be in charge of competent naval militiamen. As all such vessels should be provided with some of the smaller guns, we here again see the necessity for an intimate knowledge of the guns and their manipulation.

A large number of small fleet steam yachts, each fitted with one or two tubes for launching auto-mobile torpedoes, could greatly harass the armed fleet of an enemy. They would, of course, require to be manned and officered by expert torpedoists.

If employed in any of the ways indicated, a thorough knowledge of local waters, extending to small creeks and estuaries, with a good knowledge of the topography of the adjacent land, will be indispensable.

Handling boats under various circumstances would, of course, be requisite in any of the work referred to.

An inspection of the ice boats showed them to be well adapted to the use of the militia during their annual cruises, and from the nature of their regular duties they would always be available during the summer months. They should, however, be fitted with regular awnings and curtains, or knockup deck houses, and arm and equipment racks. Were this done, they would be very comfortable, which was not the case this year, as the awnings, improvised from yachts' sails, did not prevent the frequent rains rendering many parts of the boats very wet and uncomfortable.

Having briefly outlined our ideas in regard to the probable sphere of usefulness of the Naval Militia in time of war, we can summarize them as follows: Boats, signals, rapid-fire and machine guns, torpedoes, and study of local waters and land approaches, and that these studies and drills may be intelligently and efficiently carried on, we strongly believe that the Militia should be furnished with plenty of boats of various types, signals of all kinds, and a sufficient number of guns and torpedoes to enable all the members of the Militia to become thoroughly familiar with the work which might be assigned them. We are led to this belief with the understanding that the Militia would be utilized in the way outlined, and a knowledge of the fact that at present many of the officers, in their zeal and earnestness, have been making appropriations from their private funds to properly carry on the work as now performed, and that if greater knowledge be expected a still greater drain would follow.

Very respectfully,

H. H. HOSLEY, *Lieutenant, U. S. N.*
T. HENDERSON, *Lieutenant, U. S. N.*
F. L. CHAPIN, *Lieutenant, U. S. N.*

The COMMANDING OFFICER, U. S. S. INDIANA.

NAVAL MILITIA OF MARYLAND.

U. S. S. AMPHITRITE, SECOND RATE,
Off Tompkinsville, Staten Island, N. Y., July 22, 1896.

SIR: In obedience to your order of May 25, 1896, we submit the following report, as the result of our observations upon the Naval Militia of Maryland, * * * while on board this ship for instruction, under your supervision.

(*a*) In the case of the Maryland Naval Militia we find that the character and scope of the instruction imparted to them are the same as those given to the crew of this ship, but owing to limited time great thoroughness was not possible. In addition to the routine drills, target practice, subcaliber, with turret and secondary guns, was held.

(*b*) The percentage of attendance was about 85.

(*c*) The organization is that of a ship's company and the station bills properly and efficiently made out, the crew being also stationed and organized as a battalion.

(*d*) Considerable professional knowledge was acquired during the week that the militia was under instruction, but as yet it is of the most elementary character.

(*e*) The discipline is excellent.

(*f*) The uniform is as near standard as possible, and excellent judgment is shown in wearing the proper uniform at all times.

(*g*) The officers and men, while lacking professional knowledge, due to want of instruction, were very efficient in their various ratings, as far as their knowledge went, and showed great desire to learn and profit by the instructions given, and seemed to be much interested in the drills. At the end of the instruction the crews at the guns, in particular, showed marked proficiency.

(*h*) The field of usefulness of this body, when efficiently organized and instructed, would be as an auxiliary to any force operating in its neighborhood, and to make the first defense of its port, or preparations to that end.

(*i*) About all respectable classes of men are represented in the organization.

(*k*) None have served in the United States Navy.

(*l*) In addition to the regular drills, instruction, etc., the militia's ship "*Dale*" was thoroughly inspected and found to be in an excellent state of cleanliness and order. The ship is well fitted for the purpose of an armory, and is kept clean, decks

scrubbed, bright work cleaned, and routine carried out by the militiamen as a ship's company.

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Respectfully submitted.

KARL ROHRER, *Lieutenant.*
JOHN W. STEWART, *Lieutenant.*
F. J. HAESELER, *Lieutenant.*

Capt. WILLIAM C. WISE, U. S. N., *Commanding.*

NAVAL MILITIA OF NORTH CAROLINA.

U. S. S. AMPHITRITE, SECOND RATE,
Off Tompkinsville, Staten Island, N. Y., July 22, 1896.

SIR: In obedience to your order of May 25, 1896, we submit the following report, as the result of our observations upon the Naval Militia of North Carolina, * * * while on board this ship for instruction, under your supervision. We find—

(*a*) In the case of North Carolina, that the character and scope of the instruction imparted to them are the same as those given to the crew of this ship, including practice with main and secondary batteries, but owing to the briefness of the period of instruction thoroughness was not possible.

(*b*) The attendance was about 45 per cent.

(*c*) The organization is that of a ship's company, and the members were correctly stationed on board the "*Nantucket*," and also as an infantry battalion.

(*d*) There seems to be no improvement shown over last year's professional knowledge. Some of the officers have some slight knowledge of the profession, but evince no desire to impart it to the others, nor do the senior officers attempt to require the juniors to learn the regular routine duties and customs.

(*e*) The discipline is fair.

(*f*) The uniform is standard as far as the working clothes, but the mustering clothes of the enlisted men approximate too closely to those of the officers.

(*g*) The officers and petty officers are not very efficient in their rank and rating. The men are naturally of about the same degree of efficiency.

(*h*) The field of usefulness of this body when efficiently organized and instructed would be as an auxiliary to any force operating in its neighborhood and to make the first defense of its port, or preparations to that end.

(*i*) About all respectable classes of men are represented in the organization, the water-faring element very sparsely.

(*k*) One of the North Carolina militiamen has served in the Regular Service.

(*l*) In addition to the regular routine drills, the Naval Militia of North Carolina exercised at target practice, great guns, and secondary battery at sea. At this exercise many of the officers and men were afraid of the guns and lost all idea of discipline and details. The practice was, as a rule, miserable, and altogether the exercise was too much in advance of the very limited knowledge exhibited by this organization.

(*m*) The "*Nantucket*" was thoroughly inspected by this Board and found to be in a very poor condition, not owing to any fault of the militia. The decks are rotten, and the ship is rusty, dirty, and wornout all over. There seemed to be no desire on the part of the officers and crew to keep the ship looking like a man-of-war, and everything was slack and unseamanlike.

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Respectfully submitted.

KARL ROHRER, *Lieutenant.*
JOHN W. STEWART, *Lieutenant.*
F. J. HAESELER, *Lieutenant.*

Capt. WILLIAM C. WISE, U. S. N., *Commanding.*

NAVAL MILITIA OF SOUTH CAROLINA.

U. S. S. RALEIGH,
South Pass, Louisiana, June 26, 1896.

SIR: In obedience to the appended order, * * * we have witnessed the drills of the South Carolina Naval Militia, and have the honor to report as follows:

The first and second divisions came on board at Charleston, S. C., at 9 a. m. and remained until 4.30 p. m. for three days, beginning June 15. The third division

came on board at Port Royal, S. C., about 9.30 a. m. and remained until 4.30 p. m. for two days, beginning June 19. The divisions were required to pull or sail ship's cutters going and coming.

They were instructed by our officers in the nomenclature of the ship, the uses of the various winches, pumps, pipes, manifolds, valves, and mechanical appliances, the method of stowing and supplying ammunition, the method of flooding, ventilation, and draining magazines and shell rooms, and the manner of closing watertight doors for collision, fire, and general quarters, and such other details as might suggest themselves, including practical instruction at general quarters.

They were drilled in the manual at small arms, in casting loose, providing, loading, pointing, and firing, main and secondary guns, subcaliber practice with 6 pounder Hotchkiss; aiming drill, boats under oars and sails; and wigwag and flag signals.

The engineer's force were instructed in the engine and fire rooms by petty officers of our engineer's force.

The percentage of attendance was as follows: First division (Charlestown), consisting of 53 men, 28 per cent; second division (Mount Pleasant), consisting of 53 men, 43 per cent; third division (Beaufort), consisting of 60 men, 30 per cent; whole force, consisting of 166 men, 34 per cent.

The organization is that of a ship.

Professional knowledge, outside of piloting, boat sailing, and the running of engines, is very meager.

In the first division there were evidences of much lack of discipline. The senior officers seemed to have no idea of the habit of command nor to have sufficient control over their men. When embarking in cutters it was noticeable that enlisted men seated themselves comfortably in the stern sheets and expected the officers to take their oars. When spoken to regarding this state of affairs the militia officer frankly admitted that there was but little discipline in the division. The discipline of the Second division was somewhat better than that of the First, and that of the Third Division is very good. The men of this (Third, or Beaufort) division were well set up; the officers gave their commands well, and obedience was quick and prompt. Both officers and men of this division appeared to take more interest and to be more eager to learn than those of the other divisions.

The commander, the board is informed, is an ex-tugboat engineer. He, with all the other officers, has no knowledge of naval life or customs nor of men-of-war and naval weapons, and it is not reasonable to expect great results under such conditions. We think it highly advisable that a monitor with suitable boats be furnished this command and that a line officer of the Navy be ordered in command to act as instructor.

The executive officer, although a very pleasant and intelligent gentleman, did not seem to actively enter upon the performance of the duties of his office or to seek knowledge relative thereto.

The uniforms are, so far as the enlisted men are concerned, absolutely unsuitable. They are the same for officers and men as they had when they were militia under the War Department, slight changes in insignia having been made to give a naval aspect without much regard to correctness. The officers wear shoulder straps with rank devices, sleeve stripes, and a tin anchor on each flap of the rolling collar of the blouse. In several cases the straps were gilt with tin insignia. The men wear the same blouse with tin anchors on the collar. The cap for the men is practically the new United States Army cap. The officers wear the regular Navy cap. It is recommended that they be requested to use the State instead of the national shield and to put the letters "S. C." above the cap device, after the manner of the Georgia Naval Militia. The gold stripe for the officers and the gold cord for the men down the seams of the trousers are unsuitable except for full dress. We recommend that, if possible, the present large stock of obsolete Navy uniforms for enlisted men be served out to the Naval Militia.

Efficiency in the various ratings is only fair. Some of the petty officers bid fair, under proper discipline and instruction, to become excellent leading men. Several of these showed remarkable zeal and eagerness to learn.

The men of all divisions picked up the drill at the main and secondary batteries quite readily and understood the signal instruction given them. Subcalibre practice and aiming drill demonstrated that quite a number are very good shots. Boat work was fair, particularly under sail. In general we classify the divisions in drill, discipline, and efficiency in order of merit as follows: Third division, Second division, First division.

The State has not made very liberal appropriations for the Naval Militia, and the manner of appointing officers will, we are informed, be improved when bills now pending before the legislature are enacted into laws. There can be no question that this organization is badly handicapped for want of suitable appliances, such as a monitor, or vessel of some sort, a few boats, a number of copies of our drill books, *proper uniforms*, and, above all, a graduate of the Naval Academy as instructor.

The class of men composing the organization is shown by the following table:

Occupation.	First division.	Second division.	Third division.	Total.
Masters of vessels	.....	1	1	2
Mates of vessels	.....	7	3	10
Pilots of steam vessels	1	3	2	6
Engineers of steam vessels	3	2	1	6
Machinists	2	.....	2	4
Firemen	2	.....	.....	2
Carpenters	2	3	4	9
Physicians	2	1	1	4
Mechanics	10	2	2	14
Clerks, etc	21	23	28	72
Manufacturer	1	.....	.....	1
Tradesmen	2	4	12	18
Railroad men	2	.....	1	3
Chaplain	.....	1	.....	1
Lawyers	1	2	1	4
Planters	.....	3	.....	3
Civil engineer	1	.....	.....	1
Laborers	1	1	.....	2
Telegrapher	1	.....	.....	1
Photographer	1	.....	.....	1
Butchers	.....	.....	2	2
Total	53	53	60	166

It will be seen by inspection of this table that the Naval Militia of South Carolina is composed of a class of men that will be suitable for naval service in time of war. It is thought that many of them would enlist in the Navy on the outbreak of war and take their chances of advancement. The average age is probably not greater than 23 years. As an organization its usefulness is limited to the defense of the coasts and harbors of its own and adjacent States.

No member of this organization has ever served in any capacity in the United States Navy.

Respectfully submitted.

J. M. BOWYER, *Lieutenant, U. S. N.*
WM. F. FULLAM, *Lieutenant, U. S. N.*
PHILIP ANDREWS, *Ensign, U. S. N.*

The COMMANDER IN CHIEF, UNITED STATES NAVAL FORCE ON NORTH ATLANTIC STATION.

U. S. S. RALEIGH, *New Orleans, La., July 1, 1896.*

Approved and forwarded.

MERRILL MILLER,
Captain, Commanding.

NAVAL MILITIA OF GEORGIA.

U. S. S. AMPHITRITE, SECOND RATE,
Off Tompkinsville, Staten Island, N. Y., July 22, 1896.

SIR: In obedience to your order of May 25, 1896, we submit the following report as the result of our observations upon the Naval Militia of Georgia * * * while on board this ship for instruction, under your supervision. We find:

(*a*) In the case of the Georgia Naval Militia, Brunswick company, that the character and scope of the instruction imparted to them are the same as those given to the crew of this ship, including practice with main and secondary batteries, but owing to the briefness of the period of instruction thoroughness was not possible.

(*b*) The percentage of attendance was 60.

(*c*) The form of organization is that of a company.

(*d*) There does not appear to have been any increase in professional knowledge since this company was instructed on board this ship last year.

(*e*) The discipline is the same as last year—fair.

(*f*) The uniform of the company and its officers is good.

(*g*) The officers and petty officers are not very efficient in their rank and rating; the men are naturally of about the same degree of efficiency.

(*h*) The field of usefulness of this body, when efficiently organized and instructed, would be as an auxiliary to any force operating in its neighborhood and to make the first defense of its port or preparations to that end.

(*i*) About all respectable classes of men are represented in the organization, the water-faring element very sparsely.

(*k*) None have served in the United States Navy.

This organization was on board for instruction on June 15, 16, and 17, 1896, the ship lying in the mouth of St. Simons Sound, Georgia.

(*a*) In the case of the Georgia Naval Militia, Savannah company, we find that the character and scope of the instruction imparted to them are the same as those given to the crew of this ship, but owing to the shortness of time great thoroughness was not possible.

(*b*) Percentage of attendance, 66.

(*c*) The form of organization is that of a company.

(*d*) The company has just completed its organization and has had no opportunities to acquire professional knowledge.

(*e*) The discipline is excellent, in view of the short time elapsed since the company was organized.

(*f*) The uniform of the company and its officers is standard.

(*g*) The officers give promise of becoming very efficient. The petty ratings are not permanently established, but the personnel is promising.

(*h*) The field of usefulness of this body, when efficiently organized and instructed, would be as an auxiliary to any force operating in its neighborhood and to make the first defense of its port or preparations to that end.

(*i*) About all respectable classes of men are represented in the organization.

(*k*) One man has served in the United States Navy.

This organization was on board for instruction on June 18, 19, and 20, 1896, the ship lying off Tybee Island light-house, in mouth of Savannah River, Georgia.

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Respectfully submittted.

KARL ROHRER, *Lieutenant.*
JOHN W. STEWART, *Lieutenant.*
F. J. HAESELER, *Lieutenant.*

Capt. WILLIAM C. WISE, U. S. N., *Commanding.*

NAVAL MILITIA OF LOUISIANA.

U. S. S. RALEIGH,
Philadelphia, Pa., July 11, 1896.

SIR: In obedience to the appended order * * * we have witnessed the drills of the Louisiana Naval Militia, and have the honor to report as follows:

The battalion came on board off Port Eads, La., at 9.20 a. m. and remained until 4.30 p. m., for three days, viz, June 26, 27, and 29, and on the 30th, at 5 a. m., remaining on board until arrival at New Orleans, about 4 p. m. of same date. The battalion was encamped at Port Eads during our stay there. The divisions were required to pull or sail ship's cutters, so far as practicable, coming and going.

The officers and men of this battalion were instructed by our officers in the nomenclature of the ship; the uses of the various wheels, winches, pumps, pipes, manifolds, valves, and mechanical appliances; the method of stowing and supplying ammunition; the method of flooding, ventilating, and draining magazines and shell rooms; the manner of closing water-tight doors for collision, fire, and general quarters; the method of closing shot holes, and such other details as might suggest themselves, including practical instruction at general quarters.

They were drilled in the manual with small arms; in the manual and firings with revolvers; in casting loose, providing, loading, pointing, and firing main and secondary guns and in target practice with both, and subcaliber practice with 6-inch B. L. R., 5-inch R. F., and 6-pounder Hotchkiss; aiming drill, boats under oars and sails; broadswords; and wigwag and flag signals. The engineer's, surgeon's, and paymaster's contingents were instructed in their duties by the appropriate officers and petty officers of this ship.

The percentage of attendance was as follows:

Day.	Officers.	Men.
	Per cent.	*Per cent.*
First	87	31
Second	60	34
Third	73	26
Fourth	80	35
Total	75	31

Total of whole battalion for whole time, 34 per cent. Strength of battalion, 15 officers and 185 men; *total, 200.*

organization is that of a ship and is at present a battalion of four divisions. llowing are not attached to any division: One lieutenant and executive officer, tenant (junior grade) and ordnance officer, 1 passed assistant surgeon (relative of lieutenant (junior grade), 1 chief master at arms, 1 paymaster's yeoman, and hecary. A bill now before the legislature will, when passed, make the organi- t conform exactly to the recommendations of the Secretary of the Navy.

ut. Commander John S. Watters, commanding battalion, is a graduate of the l Academy and has served a number of years as an ensign in the Navy. He is dingly well qualified by training and temperament for his present position. . F. Codman Ford, who commands a division, was a pay clerk in the Navy for al years. With these exceptions, the officers and men know nothing of the profession except what they learned on board this ship. Some have had pre- militia experience, and many of the officers and petty officers know how to e men.

take great pleasure in stating that we regard this battalion as extremely well lined. With few exceptions, the officers gave their commands well, and in all obedience was quick and prompt. The men appeared not only to show but ve respect for their officers, and both officers and men appeared to take much st and to be eager to learn.

uniform for officers is the same as our service dress, except that the pelican is ituted for the eagle in the cap device. White service uniforms have been d and will soon be ready. The officers were all in proper uniform and we with pleasure the absence of gaudy neckties and civilian's waistcoats. The were worn buttoned to the throat, as required by regulations.

enlisted men have two uniforms, viz, blue, with grommet caps, and white ng suits, with white hats. These are similar in all respects to our own, except he pelican is substituted for the eagle in the rating badge and that they retain hite hat, which we have discarded. The cap ribbon is marked "First Battal- . S. N. G." The blue uniforms only are furnished by the State. We recommend some uniform, distinctive mark be adopted and worn with all Naval Militia rms, to distinguish naval militiamen from officers and men of the Regular Navy. erence in the cap device or cap ribbon is not sufficient when caps are removed.

petty officers are generally the best men in the battalion, and they have to examinations to get their ratings. They however know little about the spe- luties of their ratings, but are intelligent and anxious to learn, and would no , with a ship for an armory, soon show great improvement under Lieut. Com- er Watters's able instruction.

cers and men, with few exceptions, took great interest in the drills and instruc- nd appeared to learn quickly. The officers soon learned the commands, and under vision of our own officers drilled their men very creditably at great guns, broad- s, and revolvers. Each officer and man got a very good idea of subcaliber practice ming drill and of their importance in developing marksmen. The target practice 00 yards, ship and target stationary, was very good. Boat work was fair only.

class of men composing the battalion is as follows:

Occupation.	Number.	Occupation.	Number.
men, contractors, etc	27	Carpenters	2
gineer	1	Electricians, telegraphers, etc	5
and kindred occupations	101	Butcher	1
ts	11	Manufacturers	2
, printers, etc	4	Chemists and druggists	3
	3	Barber	1
rs	2	House and sign painter	1
nics	8	Machinists	4
raphers	4	Baker	1
men	3	Physicians	2
nical engineers	7		
ects	6	Total	200
rapher	1		

verage ages are: Officers, 31 years; men, 24 years.

rill be seen by an inspection of the above that the Naval Militia of Louisiana nposed of a class of men that will be suitable for naval service in time of barring physical defects. The length of enlistment is four years. We respect- call attention to the importance of physical examinations, particularly as to blindness. Many would no doubt join the Navy in time of war if not rejected ally. As an organization its usefulness is limited to a participation in the e of the water approaches to New Orleans and to maintaining communication en the fleet and shore by signals and otherwise.

In reporting upon "the probable field of usefulness and availability in time of war," it is important to note that only 34 per cent of the Louisiana State militia attended during the instruction on board this ship, and from the statements of the commanding officer it appears that a larger attendance could not be expected at any time or at any other season of the year. Furthermore, when it was suggested to the officers that as far as possible the instruction of the men at all times during the year should be of a nautical or naval character, difficulties immediately presented themselves. The officers stated that nights and Sundays were the only time when the men could be assembled for instruction on shore and that at such times it would be almost impossible to give any real practical or progressive instruction in matters relating to man-of-war routine.

It is admitted that a recruit can not be transformed into a man-of-war's man in a few days. More time and instruction are required than may be needed to make him an efficient soldier. If, therefore, an organization like the Louisiana State Militia is to receive only three or four days' instruction each year on board ship, and no naval instruction at other times during the year, and if not more than one-third of the men can be mustered for this purpose—making on the average one day's instruction per year per man—it would not be reasonable to expect much of the force in time of war. It might happen that a considerable number of these men would serve out a term of enlistment without having been on board a man-of-war at all; and as it is not at all probable that the same men will report each year, the little instruction on board regular cruising ships will seldom be progressive in the case of any particular man.

To make such a force one of real "usefulness" and "availability," therefore, it is essential that a ship or monitor be permanently assigned to it for use as an armory and for practical instruction. An officer and a few men of the Regular Navy would greatly aid in the instruction on board such a ship. Even when the officers of the Militia are ex naval officers and quite competent, their enforced absence at times, and their lack of touch with the service, would make the presence of a regular officer very desirable. It is respectfully suggested that in some cases the line officer in charge of a branch hydrographic office could have charge of the ship assigned to the Naval Militia. Thus there might be a close touch with the Navy, and a thorough and progressive scheme of instruction for the Militia.

Lieut. Commander John S. Watters and Lieut. F. Codman Ford are the only members of this organization that have ever served in any capacity in the United States Navy.

Respectfully submitted.

J. M. BOWYER, *Lieutenant, U. S. N.*
WM. F. FULLAM, *Lieutenant, U. S. N.*
PHILIP ANDREWS, *Ensign, U. S. N.*

The COMMANDER IN CHIEF, UNITED STATES NAVAL FORCE,
North Atlantic Station.

NAVAL MILITIA OF ILLINOIS.

U. S. S. MICHIGAN,
Put in Bay, Ohio, August 17, 1896.

SIR: In obedience to your order of June 3 * * * we have the honor to submit the following report upon the exercises of the Naval Militia of the State of Illinois:

July 27, 9.20 a. m., Commander E. M. Stedman, commanding Militia of the State of Illinois, with 14 officers and 169 men of the first battalion from Chicago, embarked with rifles, haversacks, belts, canteens, and one 1-pounder R. F. gun on field carriage.

At 9.30 cast off from dock and started for Camp Logan, 43 miles north of Chicago, off which place the ship anchored at 1.50 p. m. During the trip to Camp Logan the officers of the ship, and as many men as could be spared, were engaged in instructing the militiamen in the mechanism of the R. F. guns and the names of the different parts of the ship. Four officers of the Militia were assigned to duty as officers of the deck and forecastle, under the supervision of the ship's officers. All of the enlisted men and but 6 of the officers were absolutely new and unacquainted with ship life. After anchoring, the two cutters and dinghy belonging to the Militia, which had been hoisted on board in Chicago, were hoisted out, and the Militia on board were landed and went into camp. The second battalion, composed of three divisions from Moline and Alton, had already gone into camp, having arrived that morning by rail.

July 28, at 9.05 a. m., 4 officers and 77 men of the First Battalion came on board, and were instructed and exercised at the R. F. guns, firing from 3 to 5 shots each with

subcaliber at targets placed at 300 yards distance; the exercises continued until 11.50 a. m., when they landed. At 2 p. m. 4 officers and 84 men of the same battalion came on board, and were given similar instructions to those in the forenoon, the exercises continuing until 4.20 p. m. During the day divisions were exercised by their own officers in pulling oars, using their two cutters, dinghy, and one of the ship's boats; other divisions were engaged in drills on shore and camp routine.

July 29, at 9.30 a. m., 10 officers and 77 enlisted men of the Second Battalion came on board, and were instructed as those of the day before, the exercises continuing until 11.30 a. m. At 2.30 p. m. 6 officers and 30 men of the same battalion came on board, and were exercised like those of the forenoon and until 4.20 p. m.

July 30. Owing to easterly winds, the beach, on account of surf, had become too dangerous for boats to land, and no communication with those in camp could be had except by signal. It is to be regretted as this day had been set for the members of this board to inspect the camp and witness the infantry drill of the entire forces.

July 31. The wind still holding to the eastward, it was found impossible to effect a landing without great danger. About noon, there being every indication of a southeast blow, the ship got under way and returned to Chicago. The Militia returned to Chicago on the following day by special train.

Percentage of attendance of First Battalion, 56 per cent, and of the Second Battalion, 93 per cent.

The form of organization is that of two infantry battalions. The First Battalion is composed of four divisons from Chicago, and the Second Battalion of three divisions, two from Moline and one from Alton.

The professional knowledge of these divisions, barring the officers who have had service in the Navy, is practically none at all. The board is of the opinion that the organization should have had more boat drill and other instruction before coming on board ship, so that the limited time allowed could be used to its greatest advantage.

The discipline was as good as could be expected from so recently organized a body. In the short period allowed for observation it was apparent that a great willingness to conform to discipline existed.

The uniform of the officers consisted of the service dress, or very similar to that of the officers in the Navy. For the enlisted men it consisted of 1 blue suit, 1 working suit, 1 blue cap, 1 white hat, 1 pair of leggins, knife, and lanyard, all of Navy regulation pattern.

The efficiency of the petty officers and enlisted men in their several ratings was, with a single exception, so far as related to ship life, of no account; the mass of them had never been on a ship before. The enlisted men all enter as seamen. The board is of the opinion that they should enter as landsmen, and should be rated only as they become competent to pass an examination.

In regard to the probable field of usefulness of the Illinois Naval Militia in time of war, we beg to refer to the report of the board on the Michigan Militia, dated from this ship on August 1, 1896, in which the subject is discussed at some length in relation to the general defense of the Great Lakes. The Illinois Naval Militia are not yet sufficiently well drilled to be considered immediately available.

For the class of men comprising the organization, we refer to the inclosed reports of the battalion commanders. We beg to call attention to the great number of mechanics in the two divisions from Moline as compared to the Naval Militia organizations of most of the other States.

In the First Battalion there are 8 officers who have served in the Navy, 2 officers who have been for a time at the Naval Academy, and 2 enlisted men who have served as such in the Navy. In the Second Battalion there are none who have served in the Navy.

Camp Logan, the place selected for the annual drills, is perfectly unsuitable, except that it affords good target ranges. The ground is very swampy, except in ridges. The beach in front of the camp is shelving and exposed to any wind east of north and south, causing a dangerous surf. The holding ground is sand and very poor, and anchorage was unsafe. The nearest harbors where boats could find refuge are Kenosha and Waukegan, 7 miles on each side. As considerable time should be spent in boat drills, the necessity of selecting some place where the boats could find ready shelter is apparent.

* * * * * * *

Very respectfully,

ALBERT MERTZ, *Lieutenant, U. S. N.*
FRANK MARBLE, *Ensign, U. S. N.*
W. D. BROTHERTON, *Ensign, U. S. N.*

The COMMANDING OFFICER, U. S. S. MICHIGAN.

NAVAL MILITIA OF MICHIGAN.

U. S. S. MICHIGAN,
Chicago, Ill., August 1, 1896.

SIR: In obedience to your order of June 3, 1896, we have the honor to submit the following report upon the exercises of the Naval Militia of Michigan.

The First Battalion of the Michigan State Naval Brigade, as the organization in that State is officially called, consists of three divisions, the first and third of which, together with the battalion staff, are stationed in Detroit, and the second in Saginaw. In pursuance of orders of the Navy Department the exercises of the two detachments—from Detroit and Saginaw—were carried on separately, each for a week at a time, on board the *"Michigan."* It will therefore be more convenient to report upon the two detachments separately. The command as a whole has never been drilled together, except last year at Mackinac and on board the *"Michigan."* The commanding officer of the battalion has never had an allowance for travel to enable him to visit Saginaw, and his attention has been almost confined to the divisions at Detroit.

Before receiving the militia, 1 officer and 37 men of the ship's complement landed at Fort Wayne and went into quarters there under arrangement with the military authorities. The engineer's force, master-at-arms, yeomen, carpenter's and gunner's gangs, quartermasters, boatswain's mates, coxswains and 2 seamen remained on board; all the rest of the deck force and the marine guard landed.

On July 6, at 8.15 a. m., the detachment at Detroit came on board with arms, bags, and hammocks, numbering 10 officers and 57 enlisted men, plus 5 cooks and servants specially enlisted for the cruise. One other officer is included as having taken part in the cruise, viz, the paymaster, who was ordered to go to Mackinac Island by rail to superintend the quartering of the command there. The militiamen were immediately watched, quartered, and stationed as the crew of the *"Michigan,"* their commanding officer acting as executive, the other line officers as navigator and watch officers, under the guidance of the regular officers. The regular petty officers of the ship in like manner coached the militiamen in their billets. The regular engineer's force, of course, continued to run the engines, there being only one engineer officer and one oiler of the militia who did duty in the engine room and the steam cutters. Otherwise all the ship's work was carried on by the militia.

At 8.30 a. m. the Assistant Secretary of the Navy and his aid and the governor of Michigan and his staff came on board and took passage to Port Huron, where they landed in the afternoon, having inspected the Militia at quarters on the way up.

The *"Michigan"* immediately sailed for Mackinac, where she arrived at 7 p. m. on the 7th, and the Militia landed and went into quarters at Fort Mackinac. The next two days they came on board in the morning and landed in the afternoon. On the 8th the ship anchored off the eastern side of Mackinac Island for subcaliber target practice and boat sailing. In the afternoon the commanding and two other officers of the *"Michigan"* inspected the quarters of the Militia at Fort Mackinac. The accommodations were found to be ample and comfortable and the barracks kept very clean and in excellent order. On the 9th the ship went up toward St. Martin Bay for target practice. At 11 p. m. of that day the Militia returned on board, and at 3 a. m. of the 10th the *"Michigan"* sailed for Detroit, where she arrived at noon of the 11th, and the Militia landed. The next morning the ship sailed for Bay City.

At first, in explaining the mechanism and handling of the new battery of rapid-fire guns, the regular officers of the ship assisted at the drills. At all other drills and in working the ship they merely superintended.

The percentage of attendance, as shown by the muster roll of the Detroit detachment, was 52 per cent. The smallness of this showing is accounted for by the fact that arrangement had previously been made with the Navy Department fixing the date of the cruise some time later in the summer, and after it was too late for many of the militiamen to change their plans the date was changed to the second week in July. It is certain that as many men of the organization took part as could leave their business at such short notice, and it is not to be doubted that if called out for active service the full command would respond.

The form of organization is that of a ship's company, as far as it is possible to carry it out in an armory; the divisions together form also a battalion of infantry.

The professional knowledge of these divisions, considering their limited opportunities of drilling on board ship, is very good. Many of the Detroit militiamen are yachtsmen, accustomed to sailing and handling small steam vessels, and they adapt themselves readily to ship work. Many of the officers and men possess good local knowledge of these waters, which would make their services very valuable in time of war. The navigator, for instance, is a licensed pilot for all the upper lakes. It is worthy of praise that the officers, knowing of the new battery mounted on board the *"Michigan,"* had made themselves familiar with rapid-fire guns theoretically; and,

considering that none of the men had ever seen one before, their drill was surprisingly good.

The discipline of the command was excellent.

The uniform of the officers was similar to the service dress of the Navy, with the badge of the State on the collar. The men had each one suit of blue, with the word "Michigan" on their cap ribbons, and one suit of white working clothes with the white hats recently worn in the service. It is strongly recommended that the men should be supplied with two suits of each, especially of white. On this cruise, when white was worn most of the time, their clothes at the end of the week became very dirty, and having only one suit they could not be washed. The officers wore uniform overcoats, but the men had none, and on cold nights had to wear civilians' overcoats. All the men had blue sweaters. It may be added that the men as well as the officers, unlike the land militia, have been obliged to provide their uniforms, as well as their arms, cartridge belts and leggings, at their own expense. They have no haversacks or canteens. They have been furnished with bags and hammocks by the Navy Department, and have provided their own mattresses

The efficiency of the petty officers and enlisted men in their several ratings, considering their limited practice on board ship, was very good. Many of the petty officers were naturally unfamiliar with all the duties of their stations, but they all made up in intelligence and zeal what they lacked in practice. With the same qualifications, the efficiency of the officers was excellent.

At Bay City, on July 13, about noon, the second division of the Michigan Naval Brigade, numbering 5 officers and 35 enlisted men, plus 4 cooks and servants, which had come down from Saginaw by rail, came on board the "*Michigan*." The same plan was followed as in the case of the divisions from Detroit. That night the "*Michigan*" anchored off the mouth of the Saginaw River, and the next day went to Pointe aux Barques, near the mouth of the bay. During the 15th it came on to blow and the ship was obliged to get under way, leaving the steam cutter and whaleboat behind, manned with most of the available men of the regular crew. She anchored that night under the lee of Gravelly Point, on the west side of the bay, and next day returned, picked up the boats, and ran back to the mouth of the Saginaw River. On the morning of the 18th the Militia was sent up to Bay City in boats and landed. The "*Michigan*" then returned to Detroit and reembarked her own crew. It will be noticed that this cruise was a much harder one than that of the Detroit divisions. With the exception of one evening's liberty at Pointe aux Barques for about half the division, the men were on board continuously from Monday noon to Saturday morning.

The percentage of attendance of the Saginaw division was 67⅛ per cent.

The form of organization is that of a single division or company of infantry. On this cruise the lieutenant in command acted as executive officer, and the division was divided to man the whole battery of the "*Michigan*," the paymaster taking charge of the powder division.

In professional knowledge the Saginaw division is far below those of Detroit. The officers and men are alike unfamiliar with ship work and drills, and have no knowledge of piloting in their own waters. It must be added, however, that none of them have had naval and very few any nautical experience whatever, except one quartermaster, who served an apprenticeship in the Navy. The division has been organized only about a year, this being their second drill aboard ship, and the position of Saginaw offers fewer opportunities for work afloat than Detroit.

The discipline of the division was excellent.

The Second Division was provided with the same uniforms as the others, but it was noticeable that several of the men wore red or white sweaters instead of blue, and some of the petty officers had their rating badges pinned instead of sewn on to their sleeves. This division borrowed hammocks from Detroit, having none of their own, and went without mattresses.

The efficiency of the officers and men of the Second Division in their several stations, considering their very limited practice on board ship, was fair, and the men showed commendable willingness to learn their duties.

The probable field of usefulness and availability in time of war of the Michigan Naval Militia, speaking of the battalion as a whole, must be considered with reference to the nature of the war in which they are likely to be called upon to take part; in other words, more particulary with reference to the plan of defense of the Lake frontier. The Naval Militia in general, as at present organized, can not be regarded as an efficient reserve from which to man the seagoing ships of the fleet. The Navy must depend in the future, as in the past, for the increase of its personnel in time of war upon the merchant marine and the seafaring population of the country. But apart from the subject of a national reserve, the more appropriate function of the several State Naval Militia organizations is the local defense of their own and adjacent waters and the manning of improvised flotillas.

Leaving out of the question, therefore, the availability of the Michigan Naval

Militia in other theaters of war, it is most important for them and the Department to consider their function in the defense of the Great Lakes. The problem is somewhat different from that of the seaboard. By reason of the restriction upon the regular naval force allowed to be maintained in these waters, and the absence of fortified harbors, relatively more dependence must be placed—now, as in 1812—in converted merchantmen and improvised means of defense. The plan for the defense of the Great Lakes must of course be studied as a whole, in which the Naval Militia of every bordering State have their part. It is therefore earnestly recommended that the Department should guide and instruct the several State commanders, to the end that they may know and be ready to fulfill what will be required of them. Their work throughout the year, as well as the annual drill, ought to be advised by the Department, and not left wholly to their own independent direction or to the officers who may from year to year constitute the boards ordered to report upon their work. At present each battalion is left in the dark, and goes on drilling with fine enthusiasm, but its work has and can have no relation to that of any other State or to the general plan.

The detail of officers of the Naval Militia to attend the course at the Naval War College and Torpedo School can not fail to have good results, and it is to be hoped that the college may be allowed to unfold to them in some measure its plans for the defense of their waters, in order that they may work intelligently and in cooperation, as the Naval Militia of New York have done for the past two or three years. They could, if they knew what was wanted, gather much valuable information for the use of the War College.

It is strongly recommended that the Naval Militia should devote their energies, as far as their equipment will permit, to boat work and the study, at least, of submarine mines and torpedoes, and they should lose no opportunities of becoming familiar with their own and adjacent waters. The week's annual drill on shipboard would thus supplement their previous training, and not be, as now, a new and unfamiliar experience. They must be sailors rather than soldiers. A company of infantry, however well drilled, if untrained afloat, in fresh water or salt, can never be anything else than landsmen on board ships or in boats.

The Michigan Naval Militia deserve the support and encouragement of the Navy Department. They are patriotic and zealous; it rests with the Navy Department to guide them. Their work thus far, carried on in spite of considerable difficulties, has been in the right direction, and they have set themselves a high standard.

In conclusion, we have the honor to state for the information of the Department, that Mackinac Island is a very important post to be occupied in time of war. As a lookout station it commands the Strait of Mackinac, and eastward almost as far as Detour at the mouth of the St. Marys River. The quarters in the old fort would accommodate at least 1,000 men, and there is a rifle range of 1,000 yards. Though it does not command the channel south of Bois Blanc Island, it might be used as a central station for the defense of the strait.

Very respectfully,

H. B. WILSON, *Lieutenant, U. S. N.*
FRANK MARBLE, *Ensign, U. S. N.*
W. D. BROTHERTON, *Ensign U. S. N.*

The COMMANDING OFFICER.

NAVAL MILITIA OF CALIFORNIA.

U. S. S. PHILADELPHIA,
At Sea, July 15, 1896.

SIR: In obedience to your order of the 28th May, 1896, the board appointed by Capt. C. S. Cotton, United States Navy, commanding the United States flagship "*Philadelphia*," to report upon the character and scope of the drill and instruction given by this ship and her officers to the Naval Battalion, National Guard of the State of California, has the honor to submit the following report:

Detachments from the two divisions stationed at San Francisco were instructed and drilled on board the "*Philadelphia*" on May 19 and 20, June 3, 4, 5, 9, and 12.

The drills and instructions were given during the evenings of the dates mentioned, the commanding officer of the battalion reporting that it was impracticable for his men to be absent from their business or employment during the daytime; therefore the drills and instruction were limited to about one hour on each occasion, and were carried on with the aid of such light as could be afforded by the electric deck lights of the ship.

The instruction was confined to the detailed drills with the 6-inch B. L. R., the 6-pounder H. R. F., the use of the ammunition for each of these guns, and instruction was also given in the use of search lights. On one occasion the men were

instructed in the physical drill with arms, in addition to other drills later in the evening.

The drills were carried on by the officers of the ship on duty at the time, the officers of the Naval Battalion attending.

The Naval Battalion joined with the battalion from the flagship in a battalion drill as infantry at Golden Gate Park on June 13, 1896, taking part in some of the simpler movements.

On June 12, 1896, instruction in the use of the spar torpedo was given to a party of five officers of the battalion, including the commanding officer. Two exercise torpedoes were exploded and the use of the apparatus explained.

The division at Santa Cruz, Cal., was given instruction in the use of the 6-inch B. L. R. June 25 and 26 in the evening, and the division was instructed at its armory on shore the evening of June 29 in the physical drill with arms.

Organization.—The Naval Battalion of the National Guard of California is organized for operation as a shore body only, in accordance with the instructions for infantry and artillery, United States Navy.

Percentage of attendance.—The attendance varied each evening. At San Francisco the greatest number attending any one drill was 55 and the smallest 20. At Santa Cruz the greatest number attending a drill was 18 at the armory on shore; on board ship 32 attended each of the drills.

Professional knowledge.—With the exception of infantry and artillery drill, in which they are proficient, and a knowledge of the use of boats the officers and men of the Naval Battalion have very little practical knowledge of naval duties, owing to a lack of opportunity to acquire such knowledge. They show exceptional interest in the instruction given, work with commendable zeal, and show an intense desire to learn.

Discipline.—The discipline of the force, so far as observed by the board, is good.

Uniform.—The uniform of the men is that of the regular service. The service coats of the officers have stripes of gold lace on the sleeves.

Efficiency in various ratings.—The limited time on board and the limited duties which came under the observation of the board do not warrant an opinion on this point

Class of men.—The majority of the men are clerks in mercantile houses and mechanics, with a fair proportion of professional men. They are of exceptional intelligence and capacity.

Former service in the Navy.—No definite data on this point was obtainable by the board. The commanding officer was requested to furnish it. He stated to the board that not more than four had previous naval service, and none of the officers have ever served in the Navy as officers.

Availability in time of war.—In the opinion of the board the proper function of this force in time of war would be in connection with coast defense only, to supplement and fill out the crews of such coast-defense vessels as have skeleton crews, to lay mines, to operate improvised torpedo craft, and to repel landings from a hostile fleet.

Very respectfully,

R. R. INGERSOLL, *Lieutenant-Commander, U. S. N.*
GEORGE N. HAYWARD, *Ensign, U. S. N.*
A. S. MCLEMORE, *Second Lieutenant, U. S. M. C.*

The COMMANDER-IN-CHIEF UNITED STATES NAVAL FORCE
Pacific Station.

U. S. S. MONADNOCK,
At Anchor off San Francisco, Cal.

SIR: In obedience to the order of Capt. G. W. Sumner, United States Navy, commanding this vessel, the board appointed to report upon the Naval Militia of San Francisco respectfully submits the following:

The San Francisco division of the Naval Battalion of California is the parent organization of the Naval Militia in this State and is known as the first division. It is composed of 8 officers and 120 men, under the command of Lieut. Commander L. W. Turner, National Guard of California, who also commands the Naval Battalion of the State.

The division is divided into two companies. By the laws of the State, each company of the Naval Militia may be composed of not more than 100 men. No attempt has been made to station the men on board the "*Comanche*," other than their stations at the guns, and to this end each man has been furnished with a gun-station card.

The officers are properly uniformed. Most of the men's uniform were purchased from the general storekeeper, Mare Island Navy-Yard, and generally conform with the regulations.

The board has had but little opportunity of forming an opinion of the San Francisco division. About 30 men reported on board two nights and were drilled at the

4-inch R. F. guns and instructed in signals. The officers were given a preliminary instruction in the various service signal codes. These drills lasted for only about one hour each.

On the 11th of July the board went on board the "*Comanche*," got up steam, and worked the guns. This was the first time the men had ever been drilled on the ship.

The guns worked very satisfactorily, the mechanism being in excellent condition. The vent of each gun was found to be obstructed, it not being possible to pass a priming wire through it. The turrets trained smoothly and evenly. Time of one revolution to starboard was 1 minute 30 seconds; to port 2 minutes 30 seconds, the difference probably due to the setting of the valves, as the turret worked easily in both directions.

From the limited opportunities the board has had for observation, it is of the opinion—

(*a*) The division has practically no professional knowledge.

(*b*) The discipline is fair.

(*c*) The division would be available in time of war for any service that could be reasonably expected of it.

(*d*) The board regrets that although the "*Comanche*" was placed in the hands of the Militia three months ago the orders of Lieutenant-Commander Turner to station the men on the ship and at the guns was never obeyed.

(*e*) Referring to the small attendance of the division at the drills on board this vessel, it seems only fair to state that no orders for the division to report on board the "*Monadnock*" were issued by the Adjutant-General, as requested by Rear-Admiral Beardslee, and those who were present were mustered into line by the individual efforts of Lieutenant-Commander Turner.

(*f*) The board commends the zeal, interest, intelligence, and aptitude of the division and especially the energy and interest of Lieutenant-Commander Turner.

JESSE M. ROPER, *Lieutenant, U. S. N.*
ALBERT GLEAVES, *Lieutenant, U. S. N.*
A. M. BEECHER, *Lieutenant, U. S. N.*

The COMMANDER IN CHIEF, PACIFIC STATION.

U. S. S. MONADNOCK, SECOND RATE,
At Anchor off San Francisco, Cal., July 12, 1896.

SIR: In obedience to an order to Capt. G. W. Sumner, United States Navy, commanding the U. S S. "*Monadnock*," we have the honor to submit the following report upon the Naval Militia of Santa Cruz, Cal.:

The Militia is officially designated as the Second Division of the Naval Battalion of the State of California, and is commanded by Lieut. A. A. Morey, National Guard of California. It was organized about one year ago and is composed of 4 officers and 70 men, the latter for the most part being clerks, artisans, and students. The average age of the men is about 24.

The division is equally divided into two sections, 6 petty officers being assigned to each division. The organization stops here. There has been no attempt at any assignment for service or duty on board ship.

The officers are properly uniformed. The men are uniformed with the regulation blue overshirt, trousers, flat caps, and white working suits, with the nonregulation white hats. The shirts are not taped on the cuff and neckerchiefs are not worn.

The equipments furnished by the Government consist of a rifle, belt, and haversack for each man and one 3-inch howitzer. These equipments are in good condition. The board did not see the howitzer.

Previous to the arrival of this vessel at Santa Cruz the division had had only tentative drills under its officers in infantry tactics and with the howitzer. They had no professional knowledge, and their discipline was fair. As the division had never been on board a war vessel, there had been no opportunity for the men to learn the duties of the various ratings.

During the week beginning the 22d of June the division was exercised on board this vessel four consecutive nights. The average percentage of attendance was about 65 per cent; the average length of drill one hour and a half. The officers were instructed in naval etiquette and general duties of the officer of the deck and division. The instruction of the men included the nomenclature of the ship and its various parts and fittings, a general idea of organization, messing and berthing, clearing ship for action, general quarters, collision drill, and fire stations, etc. The signal instruction for lack of time was confined to wigwags. The men were drilled at the secondary battery, signals, and passing ammunition.

At 9 a. m. June 30, 33 men from the division under the immediate command of Lieu*tenant (junior grade) George,* accompanied by Lieutenant Morey, reported on board

for duty. The anchor was immediately weighed and the ship stood out to sea, to the southward and westward. A programme of exercises had previously been prepared, and as soon as the anchors were stowed the drills began and were continued throughout the day. On account of the rough weather the battery drill had to be suspended, it not being considered advisable by the commanding officer to pursue it. Consequently only one shot (6-pounder) was fired at the target. The *"Monadnock"* returned to her anchorage about 5 p. m.

The board commends the intelligence, interest, zeal, and aptitude of the Santa Cruz division, and believes that in time of war it would be well adapted for any service that could be reasonably expected of it.

The board respectfully recommends that the Department furnish the division with a model sketch of a watch quarter and station bill of a vessel of the *"Comanche"* type, in order that the division may be properly organized. The board also suggests that a copy of the United States Navy Regulations be issued to each division of the Naval Battalion.

It is the opinion of the board that it would greatly contribute to the development of the Naval Militia of the State of California if the Department would arrange to send the *"Comanche"* during the summer months to every port having a division of the Naval Battalion. The arguments in favor of such a practice cruise are obvious.

JESSE M. ROPER, *Lieutenant, U. S. N.*
ALBERT GLEAVES, *Lieutenant, U. S. N.*
A. M. BEECHER, *Lieutenant, U. S. N.*

The COMMANDER IN CHIEF, PACIFIC STATION.

U. S. S. MONADNOCK, SECOND RATE,
Eureka, Cal., October 5, 1896.

SIR: In compliance with the order of the commander in chief of May 28, 1896, we have the honor to submit the following report of the short drills and instruction given the Fifth Division Naval Battalion, National Guard of California, commanded by Lieut. D. J. Foley, during our stay in this port.

The division consists of 67 men and 4 officers, and is organized under the laws of the State of California, which allow it to be recruited to 100 men and 5 officers.

At the first drill there were present 47 men and 4 officers, 72 per cent, and at the second drill 26 men and 4 officers, or 42 per cent.

Neither officers nor men have any professional knowledge, except of boats and what they have learned from books.

The discipline was very good, both officers and men being zealous and desirous of learning.

The officers wore the uniform of the infantry of the National Guard of the State, and the men white working clothes and white hats.

The efficiency in various ratings is naturally poor, but as the men are intelligent, young, and active—average 27 years—we believe them to be a useful and available source from which the Navy might be recruited in time of war. At the first drill of only two hours the company was divided into three sections, each in charge of an officer of this board, accompanied by an officer of the Naval Militia, and each section was drilled at the 4-inch guns, at passing ammunition, and instructed in signals.

At the second drill they were divided into two sections and drilled at the 3 and 6 pounder guns and in boats.

The time was so short that it was not practicable to instruct the commissioned officers first, as desired by the Department.

This battalion until March last was organized as an infantry company, but at that time was mustered out by the governor and recruited as a Naval Reserve Battalion.

They are armed with Springfield rifles of the models of 1873 and 1884 and are supplied with infantry belts and old-fashioned cartridge boxes.

This battalion has labored under great disadvantages and deserves credit for its zeal and appearance. None of the officers had ever been on board a man-of-war until the *"Monadnock"* came to Eureka, and few or none of the men.

We beg leave to suggest that this battalion be supplied with a 1-pounder Hotchkiss rifle, and a field carriage and boat mount.

Very respectfully, your obedient servants,

JESSE M. ROPER, *Lieutenant, U. S. N.*
J. P. PARKER, *Lieutenant, U. S. N.*
A. M. BEECHER, *Lieutenant, U. S. N.*

The COMMANDING OFFICER.

REPORT

OF THE

PRESIDENT OF THE NAVAL WAR COLLEGE AND TORPEDO SCHOOL.

NAVAL WAR COLLEGE,
UNITED STATES NAVAL STATION,
Newport, R. I., October 10, 1896.

SIR: I have the honor to submit a summary of the work done by the Naval War College during the past year.

At the close of the session of 1895, on October 15, the officers who had been in attendance during the summer were detached, leaving as the permanent staff of the college the following officers: Lieut. W. R. Rush, Lieut. H. B. Wilson, Ensign Frank Marble, United States Navy, and Capt. R. Wallach, United States Marine Corps.

Lieut. Commander J. E. Pillsbury, U. S. N., who had been in attendance at the college during the summer, upon the completion of the course was ordered to duty in connection with the college October 15, and on June 1, 1896, this officer was ordered to duty as a member of the permanent staff of the college.

Capt. R. Wallach, United States Marine Corps, was detached from the college on November 15, 1895, and Lieut. H. B. Wilson and Ensign Frank Marble were detached on May 4, 1896.

The permanent staff of the college was increased by the addition of Lieut. Marbury Johnston on November 25, 1895; Ensign L. A. Bostwick, November 30, 1895; and Ensign J. V. Chase on January 23, 1896.

During the autumn and winter the officers of the staff continued and completed the work begun during the summer. Papers and data relating to the solutions of the several problems in coast defense, strategy, and international law were revised, printed, and circulated among the officers of the Navy. Copies of war charts and plans for the defense of Nantucket Sound, Fishers Island Sound, and other strategic points were made, and many valuable deductions resulting from the discussion and study of the college staff and officers in attendance were revised, classified, and filed in the archives of the college.

Certain work of a confidential nature, ordered by the Secretary of the Navy, occupied the college staff for several months during the winter and spring.

During the spring detailed preparations were made for the session of 1896. Profiting by the experience of previous years, it was possible to get the problems and plans for the coming session ready before the session began.

On the 1st of June the session opened, the following officers having reported in attendance or reporting later during the session: Commanders Horace Elmer, R. E. Impey, J. F. Merry, M. R. S. Mackenzie,

W. T. Burwell, C. C. Todd, and G. A. Bicknell; Lieut. Commanders B. S. Richards, C. H. West, J. R. Selfridge, W. H. Everett, and B. H. Buckingham; Lieutenants J. B. Collins, A. C. Dillingham, J. H. Bull, F. E. Sawyer, B. A. Fiske, J. G. Quinby, A. C. Almy, and J. M. Ellicott; Ensigns H. K. Benham, W. K. Harrison, M. H. Signor, C. T. Vogelgesang, W. A. Moffett, and J. R. Edie, and Lieutenants J. T. Myers and L. J. Magill, United States Marine Corps.

In addition to these officers of the Navy, the following attended the whole or a portion of the course by permission of the Navy Department: Lieut. Col. A. L. Wetherill, National Guard of Pennsylvania; Commander I. E. Emerson, commanding Naval Militia of Maryland; Lieut. H. B. Ewing, Naval Militia of Pennsylvania; Lieut. T. H. Newberry, Naval Militia of Michigan; Lieut. H. B. Joy, Naval Militia of Michigan; Ensign S. Hendrie, Naval Militia of Michigan.

Before the close of the session the following officers were detached from the college by order of the Department: Commander W. T. Burwell, June 13; Commander M. R. S. Mackenzie, June 27; Ensign C. T. Vogelgesang, August 29.

The general scheme of the course this summer has been the same, somewhat amplified and slightly modified by experience, as that of last year. A full abstract will be submitted at an early date, which, like those of the last two years, already printed and distributed to the service by the Department, will contain a fuller description of the course than the limits of this report will permit, and will also indicate the more important deductions drawn from the study and discussion of the past summer upon the various problems of naval warfare and coast defense. The amount of confidential information contained in these yearly abstracts impels me to recommend that they be regarded as confidential publications by the Department.

The course was opened with an able address by Hon. William McAdoo, Assistant Secretary of the Navy, which has been printed and distributed to the service.

At other times during the summer the officers had also the benefit of listening to addresses by well-known civilians upon subjects closely concerning naval officers in their relations to our national policy abroad. The following gentlemen, by request of the college, delivered addresses:

Hon. H. A. Herbert, Secretary of the Navy: The Sea and Sea Power as a Factor in the History of the United States.

Hon. John A. Kasson: International Arbitration and its Effect upon National Policies.

Hon. E. J. Phelps: The Relations of the Navy to Diplomacy.

Gen. Francis J. Lippitt: The Rights of Vessels in Foreign Ports.

Prof. T. S. Woolsey: The Right of Search and its Limitations in Time of Peace.

Mr. Charlemagne Tower: Military Operations of Sir William Howe in the War of Independence. (Two lectures.)

The War College is much indebted to these distinguished citizens for their services in this respect. It appears very desirable that naval officers, who are frequently compelled by circumstances to represent their country in difficult and important crises away from the country, should have a clear conception of our national policy, and that they should learn this, not from the daily press, nor from extremists and partisans, but from statesmen of long experience and high reputation in the councils of our country.

not be necessary to mention and describe all the lectures, some were similar to those of last year, revised where necessary in ; of recent experience, but I think it proper this year to empha- n the value of Captain Mahan's lectures at the War College increased interest and admiration that they excite among his nal brethren.

cellent lecture on "Strategic Suggestions," delivered by Capt. aylor, of the Ordnance Department of the Army, was full of lessons as to the strategic possibilities of our northern fron- ie necessity in that direction for the combined action of the id Navy gave increased weight to the clear and logical argu- Captain Taylor. It is desirable here to mention how essential lete efficiency of coast-defense campaigns is the full and fre- iscussion and interchange of opinion between our land and rces. I submit with deference to the Navy Department, and it to the War Department, that thorough preparation for oper- pon our Atlantic, Pacific, and Gulf coasts and upon the Great nd St. Lawrence River can not be attained without united f both services, extending through many years.

incipal problem of the year was the consideration of the defense Gulf of Mexico, and incidentally a study of the same locality mbined with the Caribbean Sea in one theater of operations. tion of this problem will be forwarded to the Department as a tial paper as soon as completed.

lution of the naval tactical problems was continued this year, in excited much interest. The solving of these problems has ject (1) the instilling into the mind quick tactical perception he inculcating in officers the habit of prompt decision, thus cting the tendency to over-deliberation that is apt to be engen- y the consideration of such problems as the principal problem ear. Much good, it is thought, was derived from these prob- s year by the officers in attendance.

ant use was made of the library by the officers in attendance he summer, the officers of the permanent staff, and other offi- he service interested in the study of naval and military history books have been sent.

additions to the library as the limited funds available would ve been made, great care being taken to select those works of recognized authority.

est professional periodicals in English, French, German, Span- Italian have been subscribed for, in order that the college eep abreast of the professional thought of the day. Many re still necessary to make the library as complete as is desirable. opriation to be devoted to this purpose alone is suggested.

terest shown by the officers in attendance in the war games has ry marked. This has probably been largely due to improve- rules by which these so called games have more nearly hed the actual manœuverings and movements of vessels and It is not to be doubted that many professional questions have ermined by these simple means.

ions in international law were given the officers in attendance consideration, and without exception they evinced the greatest in the solutions.

estions brought forward in the situations were: (1) The amount ction to be given an American merchant vessel when captured

in the employ of one neutral country committing an act of war against another neutral; (2) the right of asylum; (3) the right of search on the high seas.

The war charts and defense plans for Nantucket Sound and the adjacent waters, begun during 1895, were continued through this session. Additional personal observation and study of the localities caused slight changes to be made in the war chart already finished of Gardiners Bay.

Following the plan adopted during the last two years, the Department authorized parties of officers to make short reconnaissances of Nantucket Sound, Buzzards Bay, Cape Cod Bay, Gardiners Bay, and Fishers Island Sound.

During the early spring a party of officers of the permanent staff, under orders of the Department, made an examination of the strategic positions of importance on the Gulf of Mexico.

By orders of the Secretary of the Navy, a party of officers in attendance were enabled to make a short reconnaissance of neighboring waters on board the *Dolphin*. The excellent work performed by this party leads me to recommend that a vessel of the light cruiser or gunboat class be detailed for reconnaissance work of the War College for two months during the winter and one month during the summer, the winter period being spent in necessary work in the Gulf of Mexico or in Southern bays and harbors and the summer period in work in the vicinity of the War College.

In accordance with our practice of previous years and through the kindness of Commander Converse, a number of the officers in attendance took a course of instruction in torpedoes at the Torpedo Station.

By orders of the Department, Lieutenant Commander Wainwright, Chief of the Office of Naval Intelligence, attended a portion of the college session. The desirability of close relations between these two institutions leads me to hope that each year we shall have one or two officers from the Office of Naval Intelligence in attendance upon the college sessions.

In August last, during the session, the Secretary of the Navy, flying his flag on the *Dolphin*, visited the War College. At the request of the president of the college, he delivered a most interesting address before the officers in attendance and many distinguished citizens, following which he made a detailed inspection of the War College.

The Department has not yet directed the continuous attendance during the winter of the officers, five in number, as contemplated by the Secretary's order of the last two years, for the purpose of continuing the work of the summer session.

In conclusion, it affords me pleasure to state that the session which has just drawn to a close has been even more successful than those of the past two years. The sentiment of approval of the college methods has rapidly gained ground during the past few years among the officers of the Navy and many distinguished citizens.

At the close of last year I renewed my recommendation for the continuance of the system inaugurated in 1894, the value of which had already been proved. With the added experience of another year it is desirable that I should go further into details.

The marked continuation of interest manifested by the officers in attendance even to the last day of the session emphasizes the desirability that all or at least a large majority of the officers ordered to the college should be permitted to remain throughout the entire session if compatible with the requirements of the Department.

To accomplish the results I have suggested I have the honor to make the following specific recommendations: (1) That the permanent staff be not less than seven officers; (2) that as far as the requirements of the Department will permit they be assured of a certain permanence in their duty at the college, to continue not less than three years.

In this connection I wish to call attention to the estimates submitted for the support of the War College. I respectfully state that the sum appropriated by Congress for repairs and maintenance for the present year is found inadequate to meet the necessary expenses of the college and the proper care of the buildings and grounds. With each succeeding year the expenses for the care of the building, renovation, repairs, etc., have increased, while the appropriation has remained the same. I respectfully submit these facts for consideration in connection with the yearly estimate submitted for 1897.

With regard to the session of 1897 I have to recommend that the same number of officers be ordered in attendance as this year, namely, twenty-five. This number should be composed, in my opinion, of twenty from the grade of lieutenant and above, and five lieutenants of the junior grade and ensigns. I recommend that the session of 1897 include four months from the 1st of June to the 1st of October.

Very respectfully,

H. C. TAYLOR,
Captain, United States Navy,
President Naval War College and Torpedo School.

The ASSISTANT SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

LECTURES.

The following lectures were delivered:

Pay Director Billings: Supplying the Fleet in War (1).

Captain Mahan: Strategy (19).

Captain Taylor: Naval Tactics (6); Explanation of Course (1); Closing Address (1).

Captain Harrington: Tactics of the Ram (2); Notes on the United States Ship *Terror* (1).

Commander Goodrich: Coast Defense (11).

Commander McCalla: Naval Tactics (5), presented by Ensign Vogelgesang.

Commander Maynard: Electrical Appliances on Shipboard (2).

Lieutenant-Commander Pillsbury: The Problem (4).

Captain Cochrane, United States Marine Corps: Discipline (1).

Surgeon Siegfried: Naval Hygiene (4).

Lieutenant Meigs: Guns and Armor (2); Gun Tactics (1).

Lieutenant Hutchins: Torpedoes (2); Strategical Employment of Torpedo Boats (1).

Lieutenant Rush: Bizerta (1).

Lieut. W. L. Rodgers: Determination of the Types of War Vessels (2).

Naval Constructor Linnard: The Stability of Ships (2).

Professor Alger: Guns and Armor (3).

Lieutenant Lauchheimer, United States Marine Corps: Naval Law and Courts (2).

Lieutenant Niblack: Naval Tactics (1); Signaling in Relation to Naval Tactics (1).

Lieutenant Johnston: The Abyssinian Campaign (1).

Ensign Bostwick: Naval Operations in the Gulf of Mexico (1762–1861) (1).

Capt. D. M. Taylor, United States Army: Strategic Suggestions (1).

Professor Marion: Carrier-Pigeon Service (1).

In addition to the purely professional lectures, the following addresses were delivered by distinguished civilians:

Hon. H. A. Herbert, Secretary of the Navy: The Sea and Sea Power as a Factor in the History of the United States.

Hon. William McAdoo, Assistant Secretary of the Navy: Opening Address.

Hon. E. J. Phelps: The Relations of the Navy to Diplomacy.

Hon. John A. Kasson: International Arbitration and its Effect upon National Policies.

Gen. Francis J. Lippitt: The Rights of Vessels in Foreign Ports.

Prof. T. S. Woolsey: The Right of Search and its Limitations in Time of Peace.

Mr. Charlemagne Tower: Military Operations of Sir William Howe in the War of Independence (2).

REPORT

OF

THE BOARD OF VISITORS

TO THE

NAVAL ACADEMY, 1896.

ANNAPOLIS, MD., *June 6, 1896.*

SIR: The Board of Visitors begs leave to submit its report as follows:

The Board has been in session from June 1 to June 5, inclusive, and has witnessed the exercises in a programme laid down by the superintendent. It has also made examinations, by its committees and otherwise, of many matters relating to the administration and organization of the United States Naval Academy.

The Board of Visitors begs leave to submit the following recommendations:

(1) We recommend that the age for admission to the Academy be fixed at from 15 to 18 years.

(2) We recommend that the course of study be reduced from six to four years.

(3) We recommend that the requirements for admission to the Academy be increased by the addition of the subjects of plane and solid geometry and of plane trigonometry to the entrance examination programme.

(4) We recommend that permanent heads be appointed to the departments of mechanics, mathematics, physics, English (including history and law), languages (French and Spanish).

(5) We recommend that a part, at least, of every examination should be oral.

(6) We recommend that the appointments of the Board of Visitors be so made as to insure their presence at Annapolis during the examinations of the first class.

(7) We recommend that a complete and modern system of sewerage be provided for the Academy.

(8) We recommend that the sea wall be extended so as to take in all of the low land of the northerly and easterly sides, and that the space so inclosed be filled in.

(9) We recommend that a complete system of water-closets, etc., be provided.

(10) We recommend the building of two sailing practice vessels for the use of the cadets. (See House Doc. No. 185.)

(11) We recommend that one of the most modern cruisers be ordered to Annapolis from time to time.

(12) We recommend the construction of a new and thoroughly equipped building for the use of the department of ordnance.

(13) We recommend that a full supply of modern guns be furnished to the Academy as soon as practicable.

(14) We recommend the construction of a new observatory building.

(15) We recommend that suitable quarters be provided for the department of drawing.

(16) We recommend that an appropriation of $1,000 per annum be made to purchase scientific works, on subjects not professional, for use in the library.

(17) We recommend that an appropriation sufficient to bind all the unbound books and periodicals in the library be made.

(18) We recommend that the pay of the assistant librarian be fixed at $1,500 per year, and that of assistant at $1,200, for the present.

(19) We recommend the purchase, at a fair price, of the land described in H. R. 7542, section 17, as an annex to the grounds of the United States Naval Academy.

(20) We recommend that officers ordered to the Naval Academy for duty as instructors be retained for three years, without assignment to other duty, if their work is satisfactory.

(21) We recommend that the estimates for the maintenance of the United States Naval Academy be annually incorporated in a separate bill (similar to the Military Academy appropriation bill), and so submitted to Congress, and not incorporated in the naval appropriation bill, as at present.

(22) The members of the Board of Visitors paid, from their private funds, for the necessary services of a stenographer and typewriter to report their proceedings. We recommend that, in future, a clerk (who shall be a stenographer and typewriter) be provided for the Board at the public expense. We recommend that the sum of $2,500 be annually appropriated for the expenses of the Board of Visitors, as was formerly done.

(23) We are satisfied that the appointment of the Board of Visitors to the Naval Academy has produced results fully warranting the continuation of such appointments. We are deeply impressed that the advanced requirements in all branches of the naval service make it necessary that there shall be a forward movement involving the expenditure of money at the Naval Academy to provide facilities in the way of accommodations and appliances. We therefore recommend to the consideration of the Secretary of the Navy the desirability of a continuous Board, to consist of fourteen members, two of whom shall

be appointed annually by the President of the Senate, three of whom shall be appointed annually by the Speaker of the House of Representatives, and nine of whom shall be appointed by the President from civil life. These nine should be divided into three classes, three members to be appointed each year after the first year, provided that the first year nine members shall be appointed, three of whom shall serve for one year, three for two years, and three for three years, the members of each class to be determined by lot, to the end that full and intelligent consideration may be given in making recommendations in connection with the maintenance and administration of the Naval Academy.

(24) We have noticed, with some surprise, that the officers and cadets of the Academy do not salute the colors by removing their caps, but simply touch them after a formal fashion apparently modeled on foreign customs. Ladies are also saluted in the same way and not by uncovering the head. These practices are prescribed by orders. Believing that any marked departure from recognized military and social customs and manners is unwise, the Board recommends, first, that the national colors be saluted by uncovering the head; second, that ladies be recognized in the manner usual among gentlemen. It is obvious that a military salute is entirely inappropriate when rendered to a lady, who can not hold military rank nor return the salute in the same manner.

In conclusion, we have the pleasure to say that the excellent condition of affairs at the United States Naval Academy reflects the greatest credit upon the executive capacity of the superintendent, of the commandant of cadets, and of the corps of officers in general.

All of which is respectfully submitted.

J. B. ROBINSON, *President.*
JOHN C. RICHBERG, *Vice-President.*
J. C. BURROWS.
C. H. GIBSON.
P. B. LOW.
AD. MEYER.
EDWARD S. HOLDEN.
ROBERT B. HOWELL.
F. WOLCOTT JACKSON.
CHARLES SCOTT.
J. C. TAPPAN.
JOHN W. WEEKS.

The SECRETARY OF THE NAVY.

APPENDIX.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., June 5, 1896.

REPORT OF THE COMMITTEE ON THE CONDITIONS OF ADMISSION TO AND DISCHARGE FROM THE NAVAL ACADEMY.

The committee on the conditions of admission to and discharge from the Naval Academy ask leave to present this as their report:

Your committee are of the opinion that the age of admission to the Academy, which now extends from 15 to 20 years, should be reduced to between 15 and 18 years. The committee believe that the service would be more benefited if those who entered the Navy should begin preparation at an age so that their entrance in the service should not be extended much beyond the age of 21. They are further of opinion that the course, which now extends over six years, can be advantageously reduced to four by dropping the last two years, now given up to service at sea.

J. C. TAPPAN.
CHARLES SCOTT.
JOHN C. RICHBERG.
ROBERT B. HOWELL.
JOHN W. WEEKS.

REPORT OF THE COMMITTEE ON SUBJECTS OF STUDY AND STANDARDS OF SCHOLARSHIP.

Your committee beg leave to submit the following report:

It is necessary to bear in mind that the United States Naval Academy is, primarily, a technical school of a highly special character, whose chief business is to teach the art of naval warfare.

Its students must be trained to be efficient, honest, and devoted public servants in war and peace, and prepared for the very various duties which fall to the naval officer, who may be, by turns, a seaman, a navigator, a soldier, a diplomatic agent, an inspector of technical works, a director of large expenditure.

The training required is therefore very special, at the same time that it is required to cover many fields. The most important result of the Academy training is the formation of a high sense of official duty and personal honor.

This is accomplished by methods peculiar to the school, which depend in a great degree upon the large number of instructors relative to the number of students. Each cadet is daily brought face to face with his duties, and all his shortcomings are noted, and insisted upon. The requirements are reasonable, and obviously necessary. After a four years' course of training, habits are formed which are the enduring bases of official character.

The cadets are selected from each Congressional district in the United States. The requirements for admission are fixed by authority of the honorable Secretary of the Navy, and can be changed by his order at any time. The requirements for graduation are practically fixed by the necessities of the naval service. The best opinion

seems to indicate that a course of four years of study (certainly not more than five years) is, on the whole, the proper term. As time goes on and the service becomes more complicated by the introduction of new ships and more elaborate fighting machines the requirements of the graduated cadet will become higher. When the course of study becomes too full it must be relieved by raising the standard of admission. This can be done at any moment by the Secretary of the Navy, and will no doubt be done whenever the pressure of work is felt to be excessive. The system is thus elastic, and can be made to fit the circumstances at any time.

Your committee are of opinion that the entrance examination might very well be increased by the addition of the subjects of plane and solid geometry and of plane trigonometry, and so recommend. These subjects, especially trigonometry, should be rapidly reviewed by the cadet in his mathematical course at the academy. His previous preparation will allow this to be done in a short time. The saving of time to the mathematical course thus effected will materially lighten the work of the cadet, which appears to be desirable. The age of entrance to the academy should be not less than 15 nor more than 18 years.

Course of instruction—Assignment of time.

Departments.	Fourth-class.		Third-class.		Second-class.		First-class line division.		First-class engineer division.	
	First term.	Second term.	First term.	Second term.	First term.	Second term.	First term.	Second term.	First term.	Second term.
Seamanship	.....	.....	.....	.....	1	1	3	4	2	3
Ordnance	.....	.....	.....	.....	.....	.....	3	5	.....	.....
Navigation	.....	.....	.....	.....	.....	2	4	4	.....	.....
Steam engineering	.....	.....	.....	.....	3	3	.....	.....	8	12
Mechanics	.....	.....	.....	.....	5	4½	3	.....	3	.....
Physics	.....	.....	.....	4 F	4	4	3	.....	3	.....
Mathematics	6	5	5	5	.....	.....	.....	.....	.....	.....
English language (rhetoric and composition, etc)	2	2	2	2	.....	.....	.....	.....	.....	.....
History (Greece, Rome, Western Europe, United States); historical geography; naval history in general, naval history of the United States etc.; Constitution of the United States; international law	3	3	2	.....	1	1	.....	2	.....	.....
Special instruction.—The effects of alcohol, tobacco, and other narcotics							.....	½ F.	.....	½ F.

F=Friday, 7.30 to 9.30 p. m.

The assignment of time as presented in the above table seems to require no changes. It is the result of a half century of experience.

The departments of instruction at the Naval Academy may be divided into two groups:

First. The departments of mechanics, mathematics, physics, English (including history and international law), languages (French and Spanish), drawing.

Second. The departments of discipline, seamanship, ordnance, navigation, steam engineering.

In the first group the fundamental principles and the processes are practically unchanging, and it is of the greatest importance that the instruction in these subjects should be uniform from year to year and from class to class. This can best be effected, it would seem, by providing permanent heads to the departments of this group, precisely as at the United States Military Academy at West Point. The first selections should be made from officers of the service who have shown especial aptitudes. The duties of heads of departments should be to supervise the instruction of the whole class and to see that the teaching of the assistant instructors

conforms to a well-considered plan, formulated by the head of the department, and approved by the Academic Board. By such a supervision it is insured that a consistent scale of marking in each subject is maintained throughout the class. If this very desirable change is made it should be arranged that the positions of heads of department are in fact, as well as in name, permanent.

The second group of subjects is professional in character. The fundamental principles are those of mechanics, mathematics, physics, etc., but the practice (as of ordnance, steam engineering) varies from time to time as processes are perfected. It is of importance that the heads of these departments should present the very latest developments of naval science and practice, and such heads should be detailed (as now) from the most accomplished officers of the service. Their terms of service should never be less than three years. Under such a plan the Academic Board would always include at least six permanent members, and this would insure a steady and consistent policy in all intellectual matters. Fresh blood and ideas would be brought into the Board by periodical appointments of the heads of the professional departments. A close touch between the Academy and the service at large would exist as at present.

The examinations in all departments of the Academy are conducted in writing only. Your committee is quite clear that an important part of every examination should be oral. The justice and impartiality of the instructors is beyond question and need no written vouchers. Oral examinations test other points beside mere intellectual proficiency, and it is these very points which are especially valuable to a service like the Navy.

Under the present system the cadet remains for four years at Annapolis engaged in study. He is then sent to sea for two years, and returns for his final examination. It is only after such a final examination that the cadet becomes a commissioned officer. This system is condemned on all hands, and it appears to your committee to be justly condemned. During the two years at sea the status of the cadet is most unfavorable to his professional advancement. He is not an officer, with an officer's feeling of responsibility and professional pride, and his real, intimate, and vital connection with the Navy only begins when he obtains his commission and knows, at last, that he is a life member of an honorable profession. The cadets with the highest standing are, of course, reasonably sure of their careers, and this system does not operate so unfavorably in their cases as in those of cadets who are doubtful whether any amount of diligence on their part will secure their advancement to the officer's grade. There can be no doubt that the present system should be changed so as to give commissions to the cadets at the end of four years (or possibly at the end of five years) spent at the Academy.

The appointments of the members of the Board of Visitors for the year 1896 required their presence on June 1. At that date all the examinations of the cadets were terminated, and the Board could not, therefore, attend any of these exercises as is desirable. Opportunities to inspect the written examination papers were freely offered, but no systematic work of this kind has been done. It would appear to be desirable to arrange for the Board to assemble, in future, in time for its members to be present during the examination of the first class. The committee is, however, fully satisfied from other considerations that the intellectual work of the officers and cadets of the Academy is performed in a highly efficient manner, and takes pleasure in setting down its conviction that the standard of scholarship at the United States Naval Academy is high, and that the instruction of the cadets is conducted in a sound and satisfactory way, with admirable results.

Respectfully submitted.

EDWARD S. HOLDEN.
JOHN C. RICHBERG.
CHARLES SCOTT.
F. WOLCOTT JACKSON.
CHAS. H. GIBSON.

REPORT OF THE COMMITTEE ON BUILDINGS AND GROUNDS.

The Naval Academy grounds are well cared for, and increase from year to year in that beauty which has always characterized them. The buildings are clean and seem to be in as good condition as it is possible to keep buildings of the age which obtains in case of nearly all now used at the Academy. Indeed, it is plain that the time has arrived when it will not only increase health and efficiency, but also be in the interest of economy to pull down and build anew, instead of continuing repairs and renewals of the present buildings. This matter is of so much importance that we believe a systematic plan for the entire rebuilding of the cadet quarters, recitation halls, armories, etc., should be adopted and carried out as rapidly as the conditions warrant, and with that in view only such moneys should be appropriated for repairs as seems absolutely necessary to preserve the health of the cadets and those on duty at the Academy.

It seems to your committee necessary, in furtherance of the general rehabilitation of the Academy, that it would be well to do at least the following work this year:

Put in a complete and modern system of sewerage.

Extend the sea wall to take in all of the low land of the northerly side, filling same.

Extend the sea wall on easterly side to take in all land exposed at low water, filling same.

Your committee believe that the additional land provided in this way will be sufficient for the present needs of the Academy.

We also recommend that the closet system be entirely overhauled.

The buildings at the Academy which have been completed in the last fifteen years, viz, the armory and boathouse, are both ready to fall down, and in the worst condition of any buildings at the Academy. This seems to be due to the fact that they were built with an insufficient appropriation, and the foundations were not properly supported. We can not too strongly urge the desirability of completing future work in the most substantial manner.

JOHN W. WEEKS.
J. C. TAPPAN.
CHARLES SCOTT.
AD. MEYER.
P. B. LOW.

REPORT OF THE COMMITTEE ON SEAMANSHIP, ORDNANCE, NAVIGATION, STEAM, MATHEMATICS, PHYSICS, MECHANICS, ENGLISH, LANGUAGES, DRAWING, PHYSIOLOGY, AND HYGIENE.

Your committee respectfully report that while every opportunity has been afforded to enable us to present a just report in reference to the subject-matter, we have, however, deemed it advisable to be guided by the experience of those to whose judgment we can give our approval in making such recommendations as are deemed advisable.

In the department of seamanship iron and steel have supplanted wood, rigging, and sail; nevertheless it is still essential that every facility be furnished for the study and acquirement of practical seamanship. A thoroughly equipped naval officer must be a well-educated seaman. True seamanship is one of the essentials and can not be acquired on modern battle ships or steam vessels. At the earnest request of Capt. P. H. Cooper, Superintendent of the Academy, we have examined (to use his words) "the crude and insufficient means possessed by the Naval Academy for practical training of young officers in the most important and fundamental branch of their profession." This refers to the only vessel for service in practical seamanship at the Academy, the *Monongahela*, a converted steamer, a mere makeshift, wholly unfit for the purpose, except that she is safe and commodious.

Of necessity we unqualifiedly indorse the recommendation of Captain Cooper, as embodied in House Doc. No. 185, for the building of two sailing practice vessels for the Naval Academy.

We also deem it advisable that an up-to-date cruiser at certain regular intervals visit the Academy, to give the cadets an opportunity to examine and study the latest improvements. Nor, perhaps, would this come amiss to the officers who are stationed at the Academy for periods of several years.

The department of ordnance is not by any means in a material point of view what it should be. Aside from the necessity of keeping abreast of the times by acquiring such equipment as the continuous and rapid improvements in this branch of the service develop, we would especially recommend a new and thoroughly equipped building for the exclusive use of this department, the limited quarters now in use being, like many others, a makeshift. With the exception of two small Hotchkiss rapid-fire guns, the Academy does not own any of the latest types of modern ordnance. At times, to be sure, modern guns are borrowed temporarily from vessels in the service. It appears that during the past year, for the purposes of indoor drills, the only guns available of latest approved types were the two mentioned. A bare statement of these facts carries its own conclusion. Guns and mounts of the latest types, to the number of twenty-two, ought to be acquired by the Academy.

In the department of navigation we recommend that the very old building used as an observatory, which is unsuitable, be replaced by one adapted to present requirements.

The department of steam engineering appears to be well equipped for all practical purposes of instruction, but here, as everywhere, more room is required, and an extension could profitably be made and further experimental engineering.

Upon the subjects of mathematics, physics, mechanics, English, languages, drawing, physiology, and hygiene, we respectfully refer to the report of the committee on subjects of study, which so well embodies what might be here said. In view, however, of the many subjects to be taught in the time allotted, it seems that the standard of admission, if raised, would profitably eliminate that which in these branches is taught during the first year at the Academy, for in all studies pursued the want of sufficient time in which to obtain certain results is apparent.

The department of drawing occupies an upper room in the building devoted to steam engineering, with its attendant smoke, dust, and noise. The space assigned is insufficient, the floor shaky, ventilation poor, and light indifferent. A part of the space is also devoted for the purposes of a lumber and store room for engineers, owing, of course, to lack of room, not from choice. The conditions are rather trying upon one who desires to do the best. It is but fair to say that Lieut. G. P. Colvocoresses, the head of this department, has accomplished all that could be expected under these circumstances. Arrangements should be made to at least fairly accommodate this department at some other place on the grounds, especially when that very room is badly needed for other purposes.

In conclusion, it may be said that, even if desirable, the limited time at our disposal has not enabled us to go into details. That in this regard, however, nothing is lacking is evidenced by vivid impressions that the high standard aimed at is fully maintained.

Respectfully submitted.

JOHN C. RICHBERG.
PHILIP B. LOW.
JOHN W. WEEKS.
ROBERT B. HOWELL.
CHAS. H. GIBSON.

REPORT OF THE COMMITTEE ON DISCIPLINE, DRILL, PRACTICAL EXERCISES, ADMINISTRATION, AND POLICE.

The committee respectfully report that they have availed themselves of the opportunities afforded during the brief period of their visit to ascertain the condition of the Academy in the lines to which the attention of the committee was specially called.

The reputation of the Academy for the efficiency of its discipline, requiring the most faithful observance of all regulations affecting the instruction and the conduct of the cadets in their official and personal relations to the officers and to each other, is fully maintained by the present administration. The manliness exhibited, both at times of work and of leisure, gives evidence of a cultured discipline that will, in the opinion of the committee, insure the continuance at home and abroad of the efficiency and worth of the naval service which has gone far to secure the respect in which our nation is held throughout the world.

The drills and practical exercises have shown that much attention has been given by the officers in charge in securing prompt and intelligent action and so training the cadets in all practical exercises that, however divergent may be the movements of those graduating from the Academy, their united effective force, when needed, can be secured.

It is urged by those in charge that if better facilities were afforded these admittedly important branches of a naval education could be improved.

To this end the committee recommend that more and better facilities shall be given for practical exercises in all the requirements for navigating the more modern steam vessels, and fully as much should the ability to navigate sailing vessels be taught by practical exercises, from the standpoint of economy in the movement of steam vessels by sails when there is no need for prompt movement, and for the additional reason that in any emergency all officers should continue to be so educated as to be able to take charge of sailing vessels should such necessity arise, either in peace or in war.

The policing has been maintained to so high a degree that the wants of the Academy in the way of renewals, which are admitted to be necessary, are only made evident by the most careful scrutiny. These needs are considerable and will be referred to by other committees.

It is hardly necessary to add that the administration of the Superintendent, commandant of cadets, and all of the officers attached to the Academy gives evidence of the most conscientious determination on the part of the officers to discharge their duties faithfully.

F. WOLCOTT JACKSON.
CHAS. H. GIBSON.
EDWARD S. HOLDEN.
PHILIP B. LOW.
AD. MEYER.

REPORT OF THE COMMITTEE ON FINANCE AND LIBRARY.

The appropriations made for the maintenance of the Academy during the past year seem to have been expended with care and good judgment, and your committee believe the system of inspection of purchases, expenditures, etc., used at the Academy to be simple and accurate, and that, generally, the financial affairs of the Academy are managed in a most creditable manner.

Referring to the library, your committee begs leave to submit a communication from Prof. Marshall Oliver, the librarian. Having carefully considered the recommendations made therein, we consider them sound and believe they should be adopted,

the propriety of increasing the salaries of the assistants and allowing the purchase of books in the open market being especially commended.

The library can not help increasing in usefulness from year to year, and should be kept up to a modern standard in every respect. In addition to the recommendations made by Professor Oliver, we recommend that an appropriation of $1,000 a year be made to purchase scientific works other than those relating to professional subjects, and that this appropriation be continued until the library in this respect is brought to its standard in other matters.

Respectfully submitted.

JOHN W. WEEKS.
CHAS. H. GIBSON.
ROBT. B. HOWELL.
CHARLES SCOTT.
AD. MEYER.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., June 2, 1896.

SIR: I have the honor to submit the following statement as to the present status of the United States Naval Academy library:

The library contains 35,976 books, 972 volumes having been added to the shelves since July 1, 1895. Of the recent accessions, 198 volumes are bound periodicals.

The circulation for the academic year of 1895–96 has been 6,319 books and periodicals, 966 of these having been drawn by cadets.

The periodical list consists of 104 publications in English, French, Spanish, Italian, and German, many numbers on the schedule being of especial professional interest and importance to naval officers, and many of them mathematical or scientific in character. Eight periodicals are furnished gratis, 14 by the United States Naval Institute (for binding and preservation), the remainder being regularly subscribed for.

In compliance with your request that I should formulate such suggestions or recommendations as might seem to be desirable, I would say that revision of the present classification and arrangement of books, as well as a rehabilitation of the card catalogue, and the printing of a catalogue for general use (a most important measure) have been the subject of much thought and correspondence, but are still under advisement. In these internal economies the library may be compared to an estate the final settlement of which must be preceded by careful administrative action, and I am not prepared at this time to propose a solution of the problems hinted at.

It has been long felt that an appropriation should be secured specifically for the binding in a suitable manner of the large number of books that are positively worn out and stand on the shelves to-day in a dilapidated and unpresentable condition, amounting perhaps to 6 per cent of all the books present. To put these volumes in good order, to rebind them, in fact, would require $1,000 per annum for three years; after that $600 per annum for binding would suffice to accomplish the end in view. This in addition to the regular appropriation for the purchase of books.

In this connection I would recommend, as a contingent precedent to the proper execution of the work in question, that the Naval Academy library be exempted from the limitations of the public printing act as to specifications for binding, in the same way that the libraries of Congress, of the Department of State, of the office of the Surgeon-General, and of the Patent Office are now exempted by law from these limitations. The public printing act prescribes a style of binding that is not thought to be sufficiently durable to withstand the constant wear to which Naval Academy books are subjected.

It is also recommended that authority be given by law for the purchase of books and periodicals in open market on the written order of the Superintendent of the Naval Academy, in the same manner that now obtains in the purchase of books for the library of the United States Military Academy. Such authority would greatly

facilitate and expedite the transaction of business, and make it possible to obtain, at short notice, books much needed for professional use. Moreover, this simplification of business methods, if it could be accomplished, would enable the librarian and his assistants to concentrate their attention upon that part of library work which is their legitimate function. Under existing methods of selection and purchase much time and effort are lost in prolix routine.

I would also commend to your careful consideration the view that the Naval Academy library is, in effect, an academic department—a very notably important part of this institution of naval learning. The work of a library staff is scholastic in character, involves the idea of scholarship, and requires special aptitude, experience, training, and skill. But as a matter of fact the emoluments pertaining to the positions of assistant librarian and assistant do not compare favorably with the salaries of some clerks at the Academy, much less do they compare with the salaries received by assistant professors and professors in other academic departments, though the duties of the library assistants are much more nearly allied to these. The pay of an assistant professor was for many years $1,800 per annum, and of a professor $2,200. In marked contrast with this, the assistant librarian now receives $1,400 per annum, while the assistant (performing also the important duties of cataloguer) has for many years been a per diem employee, his wages amounting, for every working day in the year, to $720 per annum, while he forfeits his wages for every day of absence, and is granted no leave of absence, or vacation, without loss of pay, unless he provide a substitute.

In the interests of the library itself I would recommend that the salary pertaining to the position of assistant librarian be made $1,500 per annum, and that of the assistant $1,200 per annum, with a suitable increase after ten years' service in both cases.

Having already referred to the United States Military Academy, I would point to the fact that in the estimates for the library of that institution for 1896 there is a similar recommendation as to the honorarium of the assistant librarian, made on grounds similar to those I have suggested—the special skill, training, and knowledge, among other things the knowledge of languages, required in the work of a modern library.

In closing I may be permitted to call attention to the salaries paid in the Library of Congress as a fair criterion. Of the 30 assistant librarians in that bibliotheke 8 receive $1,400 each, and 10 receive $1,200 each; 4 receive less than these sums, and 8 receive various larger sums.

All of which is respectfully submitted; and thanking you for the attentive interest you have so kindly taken in my charge,

I have the honor to be, sir, your obedient servant,

M. OLIVER,
Professor, United States Navy, Librarian.

The CHAIRMAN OF THE LIBRARY COMMITTEE
OF THE BOARD OF VISITORS,
United States Naval Academy, Annapolis, Md.

Items of the appropriation for the fiscal year ending June 30, 1893.

Pay professors and others	$52,371.00
Special course	5,000.00
Pay watchmen and others	44,069.95
Pay employees, steam engineering department	7,824.50
Barracks gas account, heating and lighting	17,000.00
Repairs, general	21,000.00
Books for the library	2,000.00

Stationery, etc., for instructors, etc	$2,000.00
Board of Visitors	1,500.00
Chemicals, etc	2,500.00
Gas and steam machinery, etc	32,000.00
Stores and material in department of steam engineering	800.00
Material for repairs in steam machinery	1,600.00
Total	189,065.45

Items of the appropriation for the fiscal year ending June 30, 1894.

Pay professors and others	$52,371.00
Special course	3,000.00
Pay watchmen and others	44,069.95
Pay employees, steam engineering department	7,824.50
Barracks gas account, heating and lighting	17,000.00
Repairs, general	21,000.00
Books for the library	2,000.00
Stationery, etc., for instructors, etc	2,000.00
Board of Visitors	1,500.00
Chemicals, etc	2,500.00
Gas and steam machinery, etc	32,000.00
Stores and material in department of steam engineering	800.00
Material for repairs in steam machinery	1,000.00
New house for instructors	30,000.00
Boiler house	26,000.00
Total	243,065.45

Items of the appropriation for the fiscal year ending June 30, 1895.

Pay professors and others	$52,407.00
Special course	3,000.00
Pay watchmen and others	44,069.95
Pay employees, steam engineering department	7,824.50
Barracks gas account, heating and lighting	17,000.00
Repairs, general	21,000.00
Books for library	2,000.00
Stationery, etc., for instructors, etc	2,000.00
Board of Visitors	1,500.00
Chemicals, etc	2,500.00
Gas and steam machinery, etc	32,000.00
Stores and material in department of steam engineering	800.00
Material for repairs in steam machinery	1,000.00
Repairs to gas plant	5,000.00
Improvement of water front	10,000.00
Streets in Annapolis[1]	13,000.00
Total	215,101.45

Items of the appropriation for the fiscal year ending June 30, 1896.

Pay professors and others	$52,407.00
Special course	3,000.00
Pay watchmen and others	44,086.95
Pay employees, steam engineering department	7,824.50

[1]This item of appropriation was not expended.

Barracks gas account, heating and lighting	$20,000.00
Repairs, general	21,000.00
Books for the library	2,000.00
Stationery, etc., for instructors, etc	2,000.00
Board of Visitors	1,500.00
Chemicals, etc	2,000.00
Gas and steam machinery, etc	32,000.00
Stores and material in department of steam engineering	800.00
Material for repairs in steam machinery	1,000.00
Repairs, 1895 and 1896	10,000.00
Total	199,618.45

All of these amounts will be expended during current year.

REPORT OF THE COMMITTEE ON FINAL REPORT.

Your committee respectfully present the foregoing report of the Board of Visitors which has been compiled under the authority, and according to the instructions, of the whole Board. The signatures of the particular copy here submitted have, by the instructions of the Board, been signed by your committee.

Respectfully submitted.

EDWARD S. HOLDEN.
J. C. TAPPAN.
PHILIP B. LOW.
CHAS. H. GIBSON.
AD. MEYER.

REPORT OF THE SPECIAL COMMITTEE ON THE "AVAILABILITY AND DESIRABILITY" OF PURCHASING CERTAIN LAND NAMED IN H. R. 7542, SEC. 17, AS AN ANNEX TO THE GROUNDS OF THE UNITED STATES NAVAL ACADEMY.

At a meeting of the visitors held June 4, a special committee, to consist of Messrs. Gibson, Robinson, and Meyer, was appointed to fully examine into the availability and desirability of acquiring as an annex to the grounds of the United States Naval Academy certain property described in H. R. 7542, page 23, section 17, as follows:

"(17) That the Board of Visitors of the Naval Academy, when visiting said Academy in eighteen hundred and ninety-six, shall fully examine into and report to the Secretary of the Navy and to Congress the availability and desirability of acquiring as an annex to the grounds of said Academy so much of the property adjoining thereto in the city of Annapolis as is situate between the north side of Hanover street, the east side of Governor street, the north side of King George street, and the west side of Holland street, and the probable cost thereof by purchase or by condemnation for public use."

At a meeting of the Board on June 5 it was, on motion, resolved that Mr. J. W. Weeks be added to this committee. It was, also on motion, resolved that this committee, so enlarged, proceed to examine the land proposed to be added to the grounds of the United States Naval Academy and report to the full Board on its availability, and on the desirability of its addition to the grounds of the United States Naval Academy.

At a meeting of the full Board held on June 5, at 3 p. m., the chairman of the committee (Mr. Gibson) reported for the committee as follows: "We have examined the ground described in H. R. 7542, section 17, and report favorably on the proposal to purchase the land in question."

An amendment to the report was presented by Mr. Weeks to the effect that one-half the land described would satisfy the wants of the Academy. The amendment was not adopted by the full Board. The report of this committee stands as above, i. e., we recommend the purchase of the land in question.

Respectfully submitted.

CHARLES H. GIBSON.
AD. MEYER.
JOHN W. WEEKS.
J. B. ROBINSON.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., June 4, 1896.

SIR: I have the honor to transmit herewith certain information submitted by the mayor of Annapolis regarding the property adjacent to the Naval Academy which is to be considered by the Board of Visitors in case the naval appropriation bill becomes law.

(2) I will venture to state that the purchase of the property in question has not been recommended by the authorities of the Naval Academy, and is in nowise comprehended in the scheme proposed in the report of the commission appointed by the Secretary of the Navy in 1895. The plan now before the Board of Visitors will represent the scope of the measure adopted by the commission.

(3) I have to request that the Board in its investigation will consider the fact that the purchase of the blocks of land in question does not include the water front, without which the land would be of no value to the Naval Academy, and, moreover, it would be a positive detriment. The grounds would then be in the position where the city of Annapolis would project into the Naval Academy at various points—at the water line and also between Governor street and Wagner street, including much valuable property.

(4) Were it possible for the Government to possess itself of all the land which would be included in an extension of the Naval Academy wall on King George street to the water line of the harbor, there would be ample space for the erection of such buildings as are needed, but that plan would sacrifice more than is proposed by the commission's scheme.

(5) In conclusion, I have the honor to state that my opinion is adverse to the purchase of the land mentioned in the naval appropriation act of 1897.

Very respectfully,

P. H. COOPER,
Captain, United States Navy, Superintendent.

PRESIDENT OF THE BOARD OF VISITORS,
United States Naval Academy.

REPORT

OF THE

CHIEF OF THE BUREAU OF YARDS AND DOCKS.

DEPARTMENT OF THE NAVY,
BUREAU OF YARDS AND DOCKS,
Washington, D. C., October 1, 1896.

SIR: In accordance with the order and instructions contained in the Department's letter dated July 8, 1896, I have the honor to submit herewith a report of the operations at United States navy-yards and stations, coming under the cognizance of the Bureau of Yards and Docks, for the fiscal year ended June 30, 1896, accompanied by a set of my annual estimates for the fiscal year ending June 30, 1898, and such other papers as are required by law.

Very respectfully,

E. O. MATTHEWS,
Chief of Bureau of Yards and Docks.

The SECRETARY OF THE NAVY.

DEPARTMENT OF THE NAVY,
BUREAU OF YARDS AND DOCKS,
Washington, D. C., October 1, 1896.

SIR: I have the honor to submit the following estimate of amounts needed by this Bureau for the fiscal year ending June 30, 1898, with a report of the work done during the year ended June 30, 1896.

The estimates received from the commandants of the various navy-yards and stations amount to the following:

Improvements	$5,738,169.17
General maintenance	446,135.68
Repairs and preservation	631,203.43
Naval Home	78,725.00
Civil establishment	102,386.93
Total	6,996,620.21

After a careful examination the above has been reduced as follows:

Improvements	$1,373,662.57
General maintenance	300,000.00
Repairs and preservation	400,000.00
Contingent	15,000.00
Naval Home	78,725.00
Civil establishment	68,675.44
Support of Bureau	8,980.00
Total	2,245,043.01

Under improvements needed, the following are some of the principal items:

Boston, Mass.—The swinging gates for the dry dock are worn out, and should be renewed with steel; $10,000. The flooding facilities for the dock are insufficient, and it is proposed to put additional culverts in the caisson; $4,500.

New York, N. Y.—With the completion of dry dock No. 3 it becomes necessary to dredge all the upper part of the Wallabout near the causeway to afford greater facilities for handling ships at entrance to dock and also to increase the berthing capacity of the water front; $75,000. The eastern quay wall of the Whitney Basin will, under the present appropriation, be completed to within about 180 feet of the causeway. It is desired to complete this; $18,000; as also a piece of retaining quay wall between dry dock No. 3 and the old bridge; $20,000. Building for the storage of ship's steel has become a necessity at this yard; $20,000.

The present pumping house for dry docks Nos. 2 and 3 is between the docks, and a coal shed to accommodate 250 tons of coal is much needed at this place, and would save the expense of handling the coal twice; $5,000. Upon the completion of dry dock No. 3, it will be necessary to grade the ground between it and Clinton avenue; $10,000. To continue the grading and paving of streets is very desirable; $10,000. The latrines scattered about this very busy yard are in a most unsanitary condition and badly located for the present requirements. An estimate is submitted for six sanitary latrines to be so situated as to be conveniently accessible from the various shops, etc., where the men are employed; $38,000. The electric-lighting plant needs an additional dynamo and engine; $12,000. The steam engineering machine shop is much in need of an erecting shop to be built on as a wing to the main building "No. 28;" $65,000. The temporary structure used for this purpose has burned down once, resulting in a great loss. The presence of the electrician is required in the yard at night, and it is suggested that a suitable house be erected for his accommodation; $5,000.

Under the provisions of the act approved March 3, 1893, a causeway across the Wallabout to the cobdock was contracted for in January, 1895, but as the work came to about the low-water level the commissioner of public works for the city of Brooklyn requested that a number of flushing culverts might be put in above the low-tide mark in order to prevent the fouling of the water on the city side of the causeway. As there were not sufficient funds available under the appropriation to complete these, the work has been stopped under an agreement with the contractors, and an additional appropriation of $25,000 is asked, to be made immediately available, for the purpose.

In October last a board was appointed for the purpose of considering the advisability of combining the steam generators of the yard into one or more central groups. One of the groups recommended by that board was to be on the site of the present construction and repair foundry. To remove the old construction and repair foundry and chimney and build a new boiler-house chimney and coal bin, an appropriation is asked; $22,542; also for ten new boilers and piping as recommended; $31,500. It is of great importance to have this done at the present time, as we are about to put in a new boiler and pumping plant for the granite dry dock, and these boilers should be in the same house.

League Island, Pa.—The timber dry dock, which was opened March, 1891, needs very considerable repairs. The cross caps, which are

bolted to the piles near the coping level, have so rotted that they cease to hold the altar bearers. At one point the altars have been pressed in from 6 to 8 inches. When the battle ship *Massachusetts* was in dock with some of her bottom plating removed, several of the lower altars burst off, followed by a dangerous flow of water. These altars should be properly secured. Should the sides of the abutment give only a few inches on each side, the dock would be closed. It is proposed to cut down the sides of the dock to the level of half tide, below which the piles will be permanently wet, lay new cross caps, and build up the sides with concrete from that level. A new wooden deck is required for the caisson; $64,000.

The west wall of the causeway leading from the island to the mainland requires immediate attention and repairs to avoid much greater expense; $20,547.

The necessity of having a convenient place where the more expensive of the ships of the Navy may be laid up in "reserve" in fresh water, where they will be protected from floating ice, the back channel between the Schuylkill and the causeway at the foot of Broad street is considered the best and most convenient. But in order to render it available for the purpose it will be necessary to dredge out the soft mud and gravel to a depth of 30 feet, most, if not all, of which can be to great advantage pumped over the low west end of the island, thereby raising it well above the highest tides. To do this dredging economically it is recommended that the Bureau be authorized to contract for the whole amount, time to extend over two or three years, but less than one-half is asked to be appropriated this year; total, $495,000—this year, $200,000.

The sea wall has been gradually extended for several years, and it is desired to continue this important work; $20,000.

The boiler house for the steam engineering building is of corrugated iron and worn out; $3,795.

The yard scales are worn out and should be replaced by new ones; $1,880.

One 20 and one 12 ton crane are needed for lifting weights along the water front; $6,500.

New steam generators for the heating plant of the yard are needed.

Washington, D. C.—The electric plant at this yard has grown to its present dimensions without any system, and for economy should be remodeled; $16,000. Dredging is needed at the west end of the quay wall to give a uniform depth of 16 feet; $3,861. The present scale house is an old steamer deck house, totally unfit for use and beyond repair; it should be replaced by a brick building; $1,271. The eastern boundary wall is in bad condition, and by reason of the filling in alongside, the wall is easily scaled, being in many places not over 6 feet high; it should be raised; $4,103.

A storehouse is much needed at this yard in which the very valuable guns and their mounts may be stored pending distribution to ships; $35,000.

Norfolk, Va.—It is desired to continue the quay wall now building north of the timber basin, and to complete the one south of it; $25,000 and $18,000.

The dry docks are nearly 2,000 feet from the construction and repair shops. This distance adds very much to the cost of repairs to ships in dock, besides loss of time. It would be in line with true economy to erect near the dry dock a fireproof ship-fitters' shop, with storage room for dock gear; $40,000.

A garbage crematory having given such satisfaction at the New York yard, it is recommended that one be authorized for this yard; $5,000.

In order to maintain the requisite depth of water along the water front a sum for dredging is asked; $35,000.

The fresh water at this yard is now supplied from a number of artesian wells, but there is no reserve upon which to rely in case of accident or necessary stoppage of pumps. To remedy this it is proposed to build a tank to hold a three days' supply; $13,000.

The walls of the old blacksmith shop have been badly cracked by settling of the foundation and from the vibrations incident to the use of a steam hammer near by; the wooden roof-trusses are decayed and unsafe; it needs to be repaired and in many parts rebuilt so as to adapt it to modern requirements; $35,000. Paving, grading, and sewers require attention; $10,000.

In order to do away with the great expense attending the ordinary fire service, purchase and maintenance of engines and horses, cost of attendance, etc., it is recommended to put in a permanent salt water fire service, connected with the lighting boilers, so that it will be ready for use at any moment; $15,000.

The altars of the wooden dry dock (No. 2) are showing signs of decay, and a number should be renewed. Pile heads are rotting, and some will have to be cut off lower down for the cross caps; $20,000.

Port Royal, S. C.—Some grading and drainage is necessary, to preserve the sanitary condition of the station; $7,579. Track scales are needed for weighing coal and other heavy articles; $500. To increase the fresh-water reserve an additional storage cistern is required; $3,757.

Key West, Fla.—The water front from the machine shop to the southern boundary at Eaton street is unprotected from the wash of the sea, and a small sum is needed to extend the light sea wall to that point; $2,000. A little dredging along the wharves is needed; $3,000.

The old machine shop at this point is tumbling down; it is desired to erect a new one in its place of sufficient size to effect such repairs to vessels as they are not able to effect with the tools they have on board; $30,000.

Mare Island, Cal.—As mentioned in former reports, the nature of the ground at this yard is such that it is constantly being pressed out into the channel unless held by piling, it is therefore desired to continue the quay wall, so as not only to hold the earth back, but at the same time to increase the wharfage front; $30,000. The ground around the dry dock during the rainy season becomes very soft and sticky. The macadamizing should be continued; $10,000. The water along the front has been gradually decreasing; a sum is needed for dredging; $20,000.

Owing to trouble with the foundations it was found that the amount appropriated last year for the erection of a coppersmith shop was insufficient, so an additional sum is asked for this year; $3,000. North of building 55 was a shed used for storage of boats, timber wheels, and various material it has tumbled down and been removed. A small sum is asked for rebuilding it; $3,785.

Puget Sound Naval Station.—When this station was purchased it was entirely covered with a heavy mass of underbrush, vines, ferns, etc., in addition to the large standing and fallen trees. To render it safe from the great forest fires which frequently rage, particularly in July, August, and September, it will be necessary to completely clear off all this undergrowth and many of the old and least vigorous trees. This work has been commenced, but it will be necessary to continue it *for safety; $10,000.*

A wharf at which vessels needing repairs may lie and repairs be effected—an iron one is proposed, though it would be very much more satisfactory to build one of concrete walls, filled in; $60,000. A fence to properly inclose the station is much needed; $4,000. The low land near head of dry dock should be properly drained and filled in; $5,000. In the contract for the dry dock at this station, the brick discharge culvert only extended to a point abreast the entrance to the dock, which causes great trouble from scouring; it is very necessary to run it out to the end of the filled-in land so that it will discharge into deep water; $5,143.62.

At present there are no accommodations for officers ordered temporarily to the station, and considering the isolated position it is desired to erect an apartment house, where junior officers and those there temporarily may be accommodated; $12,000.

Housing torpedo boats.—When the torpedo boats now appropriated for shall have been completed there will be about twenty boats that should be hauled out of the water and protected from the weather, so that they may be at all times in perfect order for service. To enable the Bureau to do this an appropriation is asked ($225,000) in order that suitable ways and sheds may be constructed at such yards or stations as may be decided upon.

PRINCIPAL ITEMS OF WORK DONE DURING PAST YEAR.

During the year an effort has been made to keep the buildings, dry docks, wharves, etc., at the various navy-yards and stations in repair and prevent decay; but owing to the constant rearranging and changing necessitated by new tools and the demands of the construction departments at the yards, it is only by the closest and, in most cases, an unwise economy that the appropriation is made to hold out.

PORTSMOUTH, N. H.

Only such repairs as were needed to preserve buildings.

BOSTON, MASS.

The wiring of the receiving ship *Wabash* for electric lighting was completed and connections made with the yard dynamos. Buildings have been painted, roofs repaired, the walls of the large steam engineering buildings Nos. 42 and 43 repointed, sewers, drains, and water pipes put in order, wall of boiler-house building 38 taken down and rebuilt, and such other general repairs effected as were necessary for the preservation of the buildings.

Wharves and dry dock repaired and entrance to the dry dock was dredged.

NEW YORK.

The following works of improvement have been completed:

Under act of March 3, 1893.—Boundary wall from the marine barracks to Clinton avenue, thence along Clinton avenue to the water front in the Wallabout.

Building No. 6, formerly construction and repair joiner shop, which was very much in need of extensive repairs and a new roof, has been remodeled, raised one story, and fitted for construction and repair offices and drafting rooms.

Boiler-shop extension to steam engineering building No. 28.

Storehouse for inflammable oils, etc., built on the cob dock, of steel throughout, *43 by 60 feet, with a concrete floor.*

Under act approved July 26, 1894.—Three hundred and fourteen feet of quay wall at Whitney Basin.

Building 114, of steel, 85 by 200 feet without floor, used by construction as a bending shed.

Steel caisson for the granite dry dock.

Under act approved March 2, 1895.—Two hundred and twenty-four thousand four hundred and fifty-six cubic yards was dredged from the channel along the water front.

The following works of improvement are in progress:

Under act of July 2, 1890.—Dry dock No. 3: Commenced under a contract dated November 1, 1892. Contract declared forfeited April 12, 1895, and after due advertising a supplemental contract dated May 8, 1895, was entered into with Messrs. T. & A. Walsh. The dock proper is about complete, but awaits the caisson. The entrance to the dock has to be dredged and quay walls built along the sides of the approach, the money for the latter only became available on June 10 of this year.

Under the act of March 3, 1893.—The quay wall at the foot of Main street is still in progress, though the contract with J. M. Brosnan & Bro. was dated January 4, 1895, and should have been completed July, 1895. The coping is not in place yet.

The causeway across the Wallabout was contracted for January 4, 1895, with the Delaware Construction Company. The time had to be extended, owing to unfavorable tides, and in March last the authorities of the city of Brooklyn asked to have sluiceways put in the causeway in order to cause circulation in the water on their side of the causeway, where some sewers empty. As there was not enough money remaining under the appropriation to complete the proper number of sluiceways, the Department decided, with the consent of the contractors and sureties, to suspend the contract until Congress could be asked to appropriate the additional sum needed to complete the work.

The Sands street gate and gate house have been completed. Some grading has yet to be done.

Under the act approved July 26, 1894.—Rebuilding "construction and repair" machine shop and mold loft, building No. 115: On the 16th of May, 1895, the contract was awarded to the lowest bidder, Messrs. Thomas H. Stanley & Co., of New York; then they requested to withdraw their bid, claiming to have made a mistake in their figures. The opinion of the Attorney-General was asked, who held that they had no such right. They then failed to execute the contract and the Attorney-General was asked to bring suit to recover on their bond. The contract was then awarded to the next lowest bidder, Mr. Thomas Dwyer, of New York, who, in spite of the fact that the price of steel had gone up, executed the contract and the building is now nearly completed. The building is 85 by 200 feet, with steel frame filled in with brick, two stories high.

Under the act of March 2, 1895.—Quay wall (extension of) in Whitney Basin, under a contract with Messrs. Benner & Opdyke; the wall is being extended about 316 feet and the contract is very near completion.

A large quantity of paving, recurbing, etc., has been done.

Rebuilding construction and repair shipwrights' shed No. 44: This is being done under a contract with J. R. F. Kelly. It is a steel structure 50 by 140 feet.

Building No. 37, the old fire-engine house, has been refitted for the use of the equipment department of the yard.

Under appropriation contingent, 1896.—Building No. 9, which was

partially destroyed by fire May 28, 1895, is being restored; in rebuilding the roof, which was principally affected by the fire, steel trusses were substituted for the old wooden ones, and the walls were slightly raised. Work on this has been nearly completed.

Under the annual appropriation for repairs and preservation a great deal of work has been done toward adapting the old buildings to the new requirements. The old pitch and tar shed, being condemned as a menace to surrounding property, was torn down. New sanitary closets, etc., have been fitted in many of the buildings, buildings painted, roofs, spouts, skylights, etc., repaired. Spur of quay wall near stone dry dock is in course of removal. Repairs to track for traveling crane at dry dock No. 2 effected.

The ventilator on the long roof of building No. 11, construction and repair smithery, was demolished by the storm of December 26, 1895. This developed the fact that the roof trusses were badly decayed. A temporary cover was put on, and the Bureau was enabled to contract for the delivery of all the trusses and other material for a new steel roof, leaving the erection thereof to be contracted for under the new year, which has been done.

LEAGUE ISLAND, PA.

Under acts approved March 3, 1893, and July 26, 1894.—The 100-ton shears are nearly completed.

The electric light plant has been completed and tested, but as there is not sufficient doing at this yard to warrant the expense of running it, the burners, etc., have been removed and stored.

Under act approved March 2, 1895.—About 290 linear feet of sea wall are nearly completed.

An artesian well is being driven. On the west side of the western pier of the dry dock, two old cribs have been removed, and the dredging carried to 26 feet at mean low water.

A deck scow, with a pile-driving engine and boiler, has been built.

The tug appropriated for is in course of construction at the navy-yard, Norfolk.

Various repairs have been effected as the means at the disposal of the Bureau would justify.

WASHINGTON, D. C.

Under act March 3, 1893.—A fifteen-ton wrecking car has been purchased.

Under act July 26, 1894.—One locomotive wrecking car has been purchased from Industrial Works, Bay City, Mich.

Under act March 2, 1895.—Quay wall has been extended.

Roundhouse for yard locomotive and wrecking crane has been built.

Electric-light plant has been extended into the various buildings of the yard, new poles erected, etc.

Fire hydrants have been changed to conform to the city standard.

Under act July 26, 1894.—The yard wall has been extended through the marsh to within 70 feet of completion.

Under annual appropriation repairs and preservation.—In the north end of store No. 2, rooms have been fitted up to accommodate the examining and retiring boards for officers, and for the steel board.

Doors and windows have been renewed in the old forge shop, and east gun-carriage shop. Jib crane in erecting shop repaired. Boiler house to breech-mechanism shop repaired.

New floor in shell house.

New porches around office building.

Quarters repaired and sanitary conditions improved.

Forges, furnaces, and heating apparatus repaired. Buildings painted.

Railroad tracks have been extended into store No. 2 and much track repaired and new 85-pound rails placed to carry the heavy locomotives of the Pennsylvania Railroad.

NORFOLK, VA.

[Completed works.]

Under act July 26, 1894.—Twelve additional 2-inch wells were driven to an average depth of 73 feet; water is good for yard use.

Electric-light system has been extended into the ship-joiners' and boatbuilders' shops, and so as to light ships in dry docks and at the wharves.

Building No. 15: "Fire-proof" storehouse has been completed.

Under act March 2, 1895.—Tracks for swinging gates were removed, and the old gate chamber below the sills of the invert was filled with concrete. New keel blocks laid over the invert. Decayed mortar has been removed from the stonework inside the dock and along the coping line and joints carefully pointed up.

About 36,000 cubic yards of mud have been dredged from in front of the dry dock.

A 5-ton crane has been purchased and mounted on the quay wall. The quay wall has been extended. A deck scow has been nearly completed.

Under annual appropriation.—Building No. 19 has been completely refitted.

Floor of fire-engine house has been concreted.

Roofs, gutters, down-spouts, etc., of yard buildings have been repaired, tin roofs painted, various and in many cases extensive repairs have been made to building and shops. Old yards and dock paint shop converted into storeroom for inflammable materials.

The long wharf extending from the launching ways to the granite dry dock has been substantially rebuilt with creosoted piles and timber; other wharves repaired.

Railroad tracks extended. Drainage pump of dry dock repaired. Numerous other repairs, alterations, and changes have been made.

PORT ROYAL, S. C.

During the year the dry dock constructed under contract by Justin McCarthy, of Washington, D. C., contract dated February 6, 1891, was completed and accepted by the Bureau October 16, 1895. Owing to a very high tide while the dock was empty in December last, the abutment between the inner and outer gate seats gave unmistakable signs of weakness. These were found to be from faults of design and not of construction. The abutment was strengthened, and on March 27, the U. S. battle ship *Indiana* was docked. Owing to the strong westerly winds which prevailed at that time of the year, there was some delay in getting the required depth of water.

The wharf at the station was completely rebuilt under contract with Mr. B. F. Kramer, of Charleston, S. C.

KEY WEST, FLA.

The lot known as the Mallory lot was purchased, but pending the consideration of the advisability of changing the site to Hurricane (or

Man-of-War) Harbor, or to Tortugas, all work of construction was held up.

PENSACOLA, FLA.

Slight repairs to buildings, such as were needed for proper preservation, have been effected.

MARE ISLAND, CAL.

Under act March 2, 1895.—The quay wall has been extended 90 feet complete and foundations driven for about 96 feet more.

Dredging: The entrance to the dry dock was cleared, and about 84,500 cubic yards dredged and put on shore.

Yard roads have been repaired and extended.

The tug has been completed. It was built at the yard by the construction department, and is now in commission as the *Unadilla.*

Three steam capstans have been installed around the dry dock.

The 40-ton traveling crane has been tested and accepted.

The proposed enlargement of the entrance to the dock has been abandoned, the stone of the abutment being found too thin; but the controlling reason was that the altars would have been too close to the bottom of a ship that would have required the enlargement in order to enter. The building of the caisson was necessarily delayed pending the settlement of the question of enlarging the entrance.

The coppersmith shop for the steam engineering department has been completed as far as the appropriation held out.

Under the annual appropriation.—Roofs, walls, gutters, floors, etc., of numbers of buildings have been repaired, or, where needed, renewed. Painting where required.

Boilers put in order. New water pipe laid. Steam heating for buildings has been extended to decrease danger from fires.

PUGET SOUND, WASH.

Five houses have been erected for officers, and an office building. A roadway has been built to them, and sewers have been laid.

Dredging: A channel 100 feet wide has been dredged from the entrance to the dock for a distance of 300 feet, and from thence widening at an angle of 15° on each side of the axis of the dock. A depth of 36 feet at low water has been secured.

Dry dock: During the month of November, 1895, all of the construction work proper was completed, but November 14 the cofferdam gave way, flooding the dock and carrying a great deal of loose material into the dock. From that time the contractors were busy removing the débris and repairing the damage done, until the assembling of the board for testing the dock, on the 9th of April. The dock was then tested by docking the U. S. S. *Monterey* twice—once at each end. The dock stood the test well, but it was found that a number of minor fittings were not in accordance with the contract and specifications, and a crack developed in one of the pump casings. These defects are now being remedied.

A portion of the wooden pile wharf in front of the station has been repaired.

The grounds are gradually being cleared of the undergrowth so as to decrease the danger from fire.

NAVAL HOME, PHILADELPHIA, PA.

The following table shows the changes among the beneficiaries during the fiscal year:

On rolls June 30, 1895		220
Original admissions		26
Readmissions		4
Total		250
Died	23	
Discharged	8	
Transferred	1	
Dropped	2	
Dismissed	2	
		36
On rolls June 30, 1896		214

Under administration of Capt. J. C. Watson, U. S. N., the present governor, the condition of the Home has been greatly improved. Electric light has been introduced throughout the buildings and grounds. Old drains have been removed and new drains and concrete floors laid in parts of the basement where needed, thus greatly improving the sanitary condition of the buildings. The kitchen has been thoroughly ventilated; much paving done. Painting beneficiaries' rooms in progress. Old carpenter shop and soap house have been rebuilt. Plumbing overhauled throughout. The Government plats in Mount Moriah Cemetery are kept in good order.

The death rate during the year has been considerably above the average, but it is in no way due to local causes, kidney trouble and wearing out accounting for nearly all. The sanitary condition of the Home is good. The discipline is excellent.

The library is kept up by purchase and by contributions. Everything is being done with a view to render this a comfortable and attractive Home for those who, having served twenty years in the Navy and Marine Corps, are incapacitated from earning a living.

In this connection I would repeat my recommendation of last year, that the wharf and land cut off from the Home by the railroad be sold and the proceeds devoted to increased accommodations for, and additional comfort of, the beneficiaries.

A statement of the amounts expended under each specific head of appropriation during the fiscal year 1896 and the balance remaining unexpended, as required by law, is appended.

An abstract of offers for special objects of improvement and supplies coming under the cognizance of this Bureau is made, in conformity to act of March 3, 1843.

Also a report showing the amount expended during the fiscal year 1896 from appropriations pertaining to this Bureau for civilians employed on clerical duty, or in any other capacity than as mechanics and workingmen at various yards and stations, with estimates for the fiscal year 1898 in accordance with law.

Very respectfully, your obedient servant,

E. O. MATTHEWS,
Chief of Bureau Yards and Docks.

The SECRETARY OF THE NAVY.

No. 1.—*Report of expenditures at navy-yards, stations, and Naval Asylum for the year ended June 30, 1896.*

Yards and stations.	Appropriations.					
	Yard improvements.	Repairs and preservation.	General maintenance.	Civil establishment.	Contingent.	Total.
Portsmouth, N. H.	$200.00	$17,370.74	$18,539.25	$5,861.00	.....	$41,970.99
Boston, Mass.	1,567.12	23,468.41	29,306.92	5,354.26	.....	59,696.71
New London, Conn.	.....	1,024.63	5,897.46	.....	.....	6,922.09
New York, N. Y.	666,502.05	80,082.36	51,339.36	13,864.62	$7,635.38	819,423.77
League Island, Pa.	78,939.37	19,945.95	13,048.57	4,078.95	3,174.81	119,187.65
Washington, D. C.	32,545.59	50,610.74	17,789.65	4,185.99	207.62	105,339.59
Norfolk, Va.	79,168.46	93,320.54	40,787.19	8,570.89	.....	221,847.08
Pensacola, Fla.	.....	10,593.76	12,287.04	1,932.00	.....	24,812.80
Mare Island, Cal.	49,711.66	53,229.49	60,775.26	12,070.45	245.00	176,031.86
Sacket Harbor, N. Y.	.....	.....	.....	365 00	.....	365.00
Key West, Fla.	.....	9,507.32	1,835.27	600.00	.....	11,942.59
Naval Home, Pennsylvania, support of.	76,152.58	.....	.....	.....	.....	76,152.58
Wharf at Erie, Pa.	.....	.....	.....	.....	548.00	548.00
Port Royal, S. C.	98,387.24	9,395.29	6,330.42	.....	.....	114,112.95
Puget Sound, Wash.	154,412.89	3,621.41	3,872.73	.....	.....	161,907.03
Total	1,237,586.96	372,170.64	261,809.12	56,883.16	11,810.81	1,940,260.69

No. 2.—*Detailed report from navy-yards and stations of expenditures under "Repairs and preservation" during the fiscal year ended June 30, 1896.*

Object.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.
Yard buildings	$1,550.16	$7,824.92	$232.37	$25,426.70	$3,719.63	$26,379.16
Officers' quarters	2,357.55	4,926.34	481.19	5,002.50	815.95	4,568.34
Wharves, bridges, landings, and boats	1,590.80	948.93	69.06	5,806.67	284.33	236.74
Roads, walks, gutters, and drains	1,591.00	1,466.16	67.50	1,224.93	1,948.85	3,435.58
Fences and walls	501.39	94.62	47.51	4,449.71	240.08	202.45
Cranes, scows, and derricks	.....	.....	.....	4,990.21	237.93	238.85
Furnaces, forges, heating apparatus, etc	3,920.70	941.85	21.85	5,663.20	1,705.76	4,157.93
Tracks and scales	.....	826.02	.....	900.82	14.41	7,107.09
Water, gas, and electric light	796.29	459.59	12.00	11,599.24	4,110.08	1,934.09
Dredging and scowing	.....	430.00	.....	1,102.00	449.62	.....
Dry docks	355.68	240.28	.....	8,397.96	100.06	.....
Miscellaneous repairs	4,707.17	3,410.50	93.15	5,518.42	3,780.85	30.47
Repairs to dikes	.....	.....	.....	.....	194.15	.....
Coal	.....	1,737.19	.....	.....	2,182.40	.....
Electric-lighting plant, equipping	.....	.....	.....	.....	143.85	1,974.04
Telephone, equipping	.....	162.01	.....	.....	18.00	119.00
Holidays	.....	.....	.....	.....	.....	227.00
Total	17,370.74	23,468.41	1,024.63	80,082.36	19,945.95	50,610.74

Object.	Norfolk.	Pensacola.	Mare Island	Key West.	Port Royal.	Puget Sound.	Total.
Yard buildings	$17,087.91	$3,268.57	$24,096.02	$137.75	$972.78	$326.55	$111,023.52
Officers' quarters	3,222.07	2,394.08	10,950.66	270.72	1,235.78	173.25	36,398.43
Wharves, bridges, landings, and boats	40,668.69	456.74	1,305.80	7,782.90	125.64	562.50	59,838.80
Roads, walks, gutters, and drains	10,829.68	1,301.83	3,126.64	.....	467.40	.....	25,459.57
Fences and walls	1,221.27	435.48	353.08	119.20	308.84	100.00	8,073.63
Cranes, scows, and derricks	1,919.03	20.42	1,638.99	.....	.....	.....	9,045.43
Furnaces, forges, heating apparatus, etc	6,167.51	189.60	1,057.86	.....	.....	4.50	23,830.76
Tracks and scales	3,016.32	30.12	167.26	.....	.....	.....	12,062.04
Water, gas, and electric light	4,952.95	538.60	4,434.64	.....	1,696.91	2,417.86	32,952.25
Dredging and scowing	50.92	.....	253.21	.....	1,318.20	.....	3,603.95
Dry docks	1,784.67	84.56	809.38	.....	1,871.44	.....	13,644.03
Miscellaneous repairs	1,755.79	1,736.08	4,225.26	1,196.75	837.81	36.75	27,329.00
Repairs to dikes	.....	.....	.....	.....	.....	.....	194.15
Coal	.....	.....	.....	.....	.....	.....	8,919.59
Electric-lighting plant, equipping	.....	.....	227.01	.....	.....	.....	2,344.90
Telephone, equipping	643.73	.....	536.40	.....	61.95	.....	1,541.09
Caisson or floating gate	.....	.....	47.28	.....	498.54	.....	545.82
Holidays	.....	137,68	.....	.....	.....	.....	364.68
Total	93,320.54	10,593.76	53,229.49	9,507.32	9,395.29	3,621.41	372,170.64

No. 3.—*Detailed report of expenditures under "General maintenance" received from yards and stations during the fiscal year ended June 30, 1896.*

Object.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.
Freight and transportation	.....	$50.64	$22.53	.....	.....	$32.08
Printing, stationery, and advertising	$102.75	41.46	.....	$1,203.18	$277.42	605.36
Books, maps, models, and drawings	21.12	278.16	.....	396.03	.....	11.60
Purchase and repair of fire engines	221.98	.....	.....	184.73	24.10	7.00
Machinery, tools, and repairs of same	130.87	347.58	3.82	.....	3.50	99.04
Repairs on steam engines and attendance on same	.....	.....	.....	1,117.12	.....	.....
Purchase and maintenance of oxen and horses, pay of hired teams, etc	3,237.35	3,324.78	993.15	8,404.06	5,431.88	3,941.91
Carts, timber wheels, and tools of every description	332.45	2,138.26	27.37	2,069.85	502.93	969.99
Postage on letters on public service and telegrams and telephone rental	.....	4.00	114.00	.....	.....	91.20
Furniture for Government houses and offices in navy-yards	467.22	556.20	20.44	1,999.29	373.60	1,124.92
Coal and other fuel	2,090.99	1,520.34	118.59	2,444.89	935.24	2,367.99
Candles, oil, gas, and electric lighting, running of	1,262.13	6,747.41	10.38	654.76	238.02	.....
Cleaning and clearing up yards and care of buildings	2,218.90	3,932.54	1,459.35	10,025.62	226.44	5,466.16
Attendance on fires, lights, fire engines, and apparatus	2,450.37	1,213.50	.....	4,807.57	19.70	39.68
Incidental labor, not chargeable to other appropriations	1,952.04	246.24	742.50	3,025.32	750.34	2,435.46
Water tax and ice	.....	4,894.72	16.31	6,567.79	.....	.....
Tolls and ferriage	.....	.....	25.00	130.00	.....	.....
Pay of watchmen	3,952.80	3,878.00	2,196.00	7,115.04	1,464.00	.....
Flags, awnings, and packing boxes	22.68	133.09	48.02	294.11	1.40	410.57
Rent of landings	75.00	.....	100.00	.....	.....	.....
Rent of officers' quarters, Philadelphia, Pa	.....	.....	.....	.....	2,800.00	.....
Holidays	.....	.....	.....	.....	.....	175.78
Total	18,539.25	29,306.92	5,897.46	51,339.36	13,048.57	17,789.65

Object.	Norfolk.	Pensacola.	Mare Island.	Key West.	Port Royal.	Puget Sound.	Total.
Freight and transportation	.....	$10.87	$2,033.36	.....	$8.25	$5.50	$2,163.23
Printing, stationery, and advertising	$473.05	69.51	384.54	$88.73	349.19	439.33	4,034.52
Books, maps, models, and drawings	243.93	.....	15.87	.....	.....	.....	966.71
Purchase and repair of fire engines	535.23	741.58	187.72	.....	4.00	.....	1,906.34
Machinery, tools, and, repairs of same	3,445.65	83.36	11.28	.....	209.60	.....	4,334.70
Repairs on steam engines and attendance on same	1,112.54	272.09	.....	.....	60.15	.....	2,561.90
Purchase and maintenance of oxen and horses, pay of hired teams, etc	4,550.22	2,099.99	10,094.68	.....	687.09	.....	42,765.11
Carts, timber wheels, and tools of every description	2,386.83	454.55	603.48	102.86	98.50	7.25	10,605.23
Postage on letters on public service and telegrams and telephone rental	725.39	.....	3,285.20	60.00	206.00	.50	4,486.29
Furniture for Government houses and offices in navy-yards	2,136.61	214.45	1,719.06	25.50	177.97	7.00	8,822.26
Coal and other fuel	11,102.53	225.10	12,867.20	.....	614.70	450.00	34,737.57
Candles, oil, gas, and electric lighting, running of	.....	90.40	1,346.93	.....	.....	97.50	10,447.53
Cleaning and clearing up yards and care of buildings	165.43	539.83	6,021.13	.....	696.61	40.65	30,794.66
Attendance on fires, lights, fire engines, and apparatus	1,770.52	970.72	8,645.76	.....	398.47	.....	20,316.29
Incidental labor, not chargeable to other appropriations	125.00	79.52	2,972.65	124.23	73.81	2,820.00	15,347.71
Water tax and ice	53.66	867.86	5,039.06	.....	2,680.01	5.60	20,124.41
Tolls and ferriage	95.00	60.00	2,760.00	.....	.....	.....	3,070.00
Pay of watchmen	11,565.60	5,328.96	2,210.66	1,398.00	.....	.....	39,109.06
Flags, awnings, and packing boxes	.....	178.25	216.68	35.95	64.07	.....	1,404.82
Rent of landings	300.00	.....	360.00	.....	.....	.....	835.00
Rent of officers' quarters, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	2,800.00
Holidays	.....	.....	.....	.....	.....	.....	175.78
Total	40,787.19	12,287.04	60,745.26	1,835.27	6,330.42	3,872.73	261,869.12

No. 4.—*Estimates received from navy-yards, stations, and Naval Asylum for fiscal year ending June 30, 1898.*

Yards and stations.	Appropriations.				
	Yard improvements.	Repairs and preservation.	General maintenance.	Civil establishment.	Total.
Portsmouth, N. H.	$200,000.00	$29,025.00	$21,781.00	$5,885.00	$256,691.00
Boston, Mass.	29,500.00	31,800.00	39,000.00	8,624.25	108,924.25
New London, Conn.		1,225.00	6,553.00		7,778.00
New York, N. Y.	644,000.00	153,000.00	87,300.00	26,865.88	911,165.88
League Island, Pa.	1,888,128.95	75,068.66	32,816.34	7,040.00	2,003,053.95
Washington, D. C.	25,235.82	34,500.00	23,000.00	5,743.25	88,479.07
Norfolk, Va.	1,948,856.50	106,900.00	72,134.00	13,649.53	2,141,540.03
Pensacola, Fla.		66,692.62	19,230.13	2,486.32	88,409.07
Mare Island, Cal.	344,075.90	106,609.35	100,394.46	21,460.50	572,540.21
Sacket Harbor, N. Y.		375.00		365.00	740.00
Key West, Fla.	37,400.00	2,982.80	2,276.75	600.00	43,259.55
Naval Home, Pennsylvania, support of	78,725.00				78,725.00
Port Royal, S. C.	138,212.62	9,875.00	12,050.00	6,141.20	166,278.82
Puget Sound, Wash.	482,750.38	13,150.00	29,600.00	3,526.00	529,035.38
Total.	5,816,894.17	631,203.43	446,135.68	102,386.93	6,997,620.21

No. 5.—*Detailed estimates from yards and stations for works of improvement for the fiscal year ending June 30, 1898.*

Yards, stations, and object.	Estimates.	Total.
PORTSMOUTH, N. H.		
Commencing timber dry dock	$200,000.00	
		$200,000.00
BOSTON, MASS.		
Swinging gates for dry dock	10,000.00	
Additional culverts for caisson for filling dry dock	4,500.00	
Wharf No. 4, reconstruction of	15,000.00	
		29,500.00
NEW YORK.		
Dredging Whitney Basin and Wallabout Channel	180,000.00	
Berthing piers	30,000.00	
Quay wall—		
Whitney Basin	18,000.00	
Wallabout Channel	20,000.00	
Between Granite dock No. 1 and Main street	60,000.00	
Coal dock, to complete	25,000.00	
Coal shed for dry dock	5,000.00	
Sands street gate house, to complete	40,000.00	
Grading and sewering between dry dock and Clinton avenue	28,000.00	
Grading and paving Causeway street along yard wall and Sixth street	42,000.00	
Grading and paving streets	10,000.00	
Latrines	38,000.00	
Workshop for Yards and Docks Department	60,000.00	
Addition to electric plant	12,000.00	
Erecting shop wing building No. 28	65,000.00	
House for yard electrician	5,000.00	
		644,000.00
LEAGUE ISLAND, PA.		
New dry dock	774,107.00	
New coping for dry dock	64,000.00	
Causeway across back channel (west wall)	20,547.00	
Dredging and filling in	197,000.00	
Pier from eastern end of sea wall, east of Broad street	120,000.00	
West wall of Causeway	135,630.00	
Extending sea wall	20,000.00	
Railroad track	8,046.01	
New boiler house for steam engineering	3,795.00	
Officers' quarters	35,000.00	
Weighing scales	1,880.00	
Traveling crane about dock	65,000.00	
100-foot plate-bending shop	75,000.00	
One building slip	35,000.00	
20 and three 12-ton cranes	13,618.94	
1 wing steam-engineering shops	213,000.00	
Commandant's office	53,735.00	
Continuation of light retaining wall	37,500.00	
New entrance gate to navy-yard	3,700.00	

No. 5.—*Detailed estimates from yards and stations for works of improvement, etc.*—Cont'd.

Yards, stations, and object.	Estimates.	Total.
LEAGUE ISLAND, PA.—continued.		
Sidewalks	$4,000.00	
Steam generator for heating and electric plant	5,500.00	
Lightning-rods	1,670.00	
Telephone system of yard at, annual rental of	400.00	
		$1,888,128.95
WASHINGTON, D. C.		
Improving electric plant	16,000.00	
Dredging in front of sea wall	3,861.00	
New scale house	1,271.82	
Raising east wall of the yard	4,103.00	
		25,235.82
NORFOLK, VA.		
Concrete and granite dry dock	1,084,000.00	
Fitting out basin	329,000.00	
Ship fitters' shop	80,000.00	
Extension of quay wall north of timber basin	145,000.00	
Extension of quay wall from timber basin to marine railway	18,000.00	
Ship fitters' shop near dry docks	40,000.00	
100-ton floating derrick	70,000.00	
Garbage crematory	5,000.00	
Dredging	35,000.00	
Extending railway track for traveling crane	13,000.00	
Rebuilding blacksmith shop	35,000.00	
100-ton overhead traveling crane, etc	20,000.00	
Steel standpipe reservoir, 270,000 gallons	13,000.00	
Paving, grading, and sewers	20,000.00	
Salt water fire service	15,000.00	
Grading and paving sidewalks, etc.:		
Brown avenue	11,467.50	
Breese street	15,389.00	
		1,948,856.50
PORT ROYAL, S. C.		
Yards and docks buildings	52,867.96	
Power house and installation of electric-light plant	16,041.18	
Breakwater	33,371.07	
Hospital	4,104.74	
Extension of roadway	14,765.62	
Grading and drainage	7,579.25	
Condensing plant	3,000.00	
Railway-track scales	500.00	
Tarring dry dock	424.92	
Water lighter	1,800.00	
Storage cistern	3,757.88	
		138,212.62
KEY WEST, FLA.		
Concrete side walls in front of Government property	2,400.00	
Sea wall from machine-shop lot to extension of Eaton street	2,000.00	
Dredging along front of wharf and inside the L	3,000.00	
New machine shop	30,000.00	
		37,400.00
MARE ISLAND, CAL.		
Extension of quay wall	50,000.00	
Free bridge between Vallejo and navy-yard	205,060.00	
Moving back ferry slip alternate with the above, $78,754.89.		
Grading and paving about stone dry dock	25,000.00	
Dredging	10,000.00	
Completing coppersmith's shop	3,000.00	
Timber storage shed for construction and repair	20,000.00	
Yard chapel	8,000.00	
Dispensary and medical storehouse	14,385.07	
Greenhouse for nursery	4,845.83	
Storage shed, north of building No. 55	3,785.00	
		344,075.90
PUGET SOUND, WASH.		
Electric-light plant	$7,438.81	
Officers' quarters	12,000.00	
Clearing, stumping, and grading station	21,875.00	
Wharf	339,670.80	
Fence around station	8,681.00	
Standard gauge track	3,426.00	
Roads	12,749.75	
Railway for locomotive crane	8,264.40	
Locomotive crane	55,000.00	
Grading, filling in marsh	8,510.00	
Extension of brick discharge-culvert	5,143.62	
		482,759.38
Naval Home, Pennsylvania, support of		78,725.00
Total		5,816,894.17

No. 6.—*Detailed estimates from navy-yards and stations for "repairs and preservation" for the fiscal year ending June 30, 1898.*

Object.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.	Norfolk.
Yard buildings	$8,000.00	$10,000.00	$250.00	$50,000.00	$14,401.02	$10,000.00	$45,000.00
Officers' quarters	1,000.00	8,000.00	250.00	8,000.00	1,214.00	4,000.00	5,500.00
Wharves, bridges, landings, and boats	3,000.00	1,500.00	100.00	10,000.00	349.66	800.00	5,900.00
Roads, walks, gutters, and drains	2,000.00	10,000.00	100.00	3,000.00	4,465.90	4,000.00	10,000.00
Fences and walls	500.00	100.00	75.00	5,000.00	2,509.30	250.00	1,500.00
Cranes, scows, and derricks	2,000.00	100.00	.....	12,000.00	699.80	800.00	1,000.00
Furnaces, forges, heating apparatus, etc	2,000.00	1,000.00	50.00	8,000.00	915.42	5,000.00	5,000.00
Tracks and scales	25.00	100.00	.....	2,000.00	203.73	6,000.00	5,000.00
Water and gas works	2,000.00	500.00	50.00	15,000.00	4,037.00	1,000.00	7,000.00
Dredging and scowing	.....	2,000.00	.....	.....	.....	.....	10,000.00
Dry docks	1,000.00	1,000.00	.....	15,000.00	38,000.00	.....	8,000.00
Miscellaneous repairs	1,500.00	2,500.00	350.00	25,000.00	3,694.04	2,000.00	2,000.00
Dikes	.....	.....	.....	.....	4,578.79	.....	1,000.00
Cistern	.....	.....	.....	.....	.....	.....	.....
Coal and coal sheds, Seavey's Island	6,000.00	.....	.....	.....	.....	.....	.....
Telephones, equipping	.....	.....	.....	.....	.....	150.00	.....
Caissons or floating gates	.....	.....	.....	.....	.....	.....	.....
Electric-lighting plant, equipping	.....	.....	.....	.....	.....	1,500.00	.....
Total	29,025.00	31,800.00	1,225.00	153,000.00	75,068.66	34,500.00	106,900.00

Object.	Pensacola.	Mare Island.	Sacketts Harbor.	Key West.	Port Royal.	Puget Sound.	Total.
Yard buildings	$8,603.19	$46,255.10	.....	$2,982.80	$1,600.00	$2,000.00	$199,092.11
Officers' quarters	6,693.91	12,730.83	$375.00	.....	1,200.00	1,500.00	45,463.74
Wharves, bridges, landings, and boats	24,822.42	3,246.56	.....	.....	600.00	2,000.00	51,818.64
Roads, walks, gutters, and drains	1,346.74	21,396.87	.....	.....	800.00	1,500.00	58,609.51
Fences and walls	2,532.60	1,515.65	.....	.....	300.00	250.00	14,532.55
Cranes, scows, and derricks	2,166.00	826.32	.....	.....	200.00	100.00	19,392.12
Furnaces, forges, heating apparatus, etc	414.27	2,159.20	.....	.....	300.00	200.00	25,038.89
Tracks and scales	.....	1,016.00	.....	.....	100.00	100.00	14,544.73
Water and gas works	1,495.00	6,817.96	.....	.....	400.00	500.00	38,799.96
Dredging and scowing	15,720.00	850.00	.....	.....	1,500.00	2,000.00	32,070.00
Dry docks	.....	285.60	.....	.....	600.00	2,000.00	65,885.60
Miscellaneous repairs	2,898.49	6,500.00	.....	.....	1,400.00	1,000.00	48,842.53
Dikes	.....	1,366.88	.....	.....	.....	.....	6,945.67
Cistern	.....	417.50	.....	.....	.....	.....	417.50
Coal and coal sheds, Seavey's Island	.....	.....	.....	.....	200.00	.....	6,200.00
Telephones, equipping	.....	824.88	.....	.....	75.00	.....	1,049.88
Caissons, or floating gates	.....	400.00	.....	.....	600.00	.....	1,000.00
Electric-lighting plant, equipping	.....	.....	.....	.....	.....	.....	1,500.00
Total	66,692.62	106,609.35	375.00	2,982.80	9,875.00	13,150.00	631,203.43

No. 7.—*Detailed estimate for "general maintenance" received from yards and stations for the fiscal year ending June 30, 1898.*

Object.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.	Norfolk.
Freight and transportation	$25.00	$100.00	.....	$250.00	.....	$50.00	$300.00
Printing, stationery, and advertising	800.00	150.00	$50.00	1,500.00	.....	1,000.00	800.00
Books, maps, models, and drawings	50.00	1,000.00	.....	3,000.00	.....	25.00	2,000.00
Purchase and repair of fire engines	100.00	.....	.....	100.00	$187.00	50.00	5,000.00
Machinery, tools, and repairs of same	50.00	500.00	100.00	7,500.00	.....	150.00	4,000.00
Repairs on steam engines and attendance on same	.....	.....	.....	8,000.00	.....	25.00	3,000.00
Purchase and maintenance of oxen and horses, pay of hired teams, etc	4,000.00	4,000.00	1,100.00	15,000.00	8,816.24	5,000.00	1,200.00

No. 7.—*Detailed estimate for "general maintenance," etc.*—Continued.

Object.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.	Norfolk.
Carts timber wheels, and tools of every description	$1,000.00	$2,000.00	$250.00	$5,000.00	$1,317.80	$2,000.00	$5,000.00
Postage on letters on public service and telegrams and telephones	106.00	50.00	125.00	250.00	.....	150.00	30.00
Furniture for Government houses and offices in navy-yards	500.00	1,000.00	100.00	5,000.00	2,278.40	1,500.00	5,000.00
Coal and other fuel for yards and docks purposes	2,500.00	8,000.00	125.00	4,000.00	2,026.50	5,000.00	5,000.00
Candles, oil, gas, and electric lighting	1,500.00	7,000.00	20.00	1,000.00	7,832.60	.....	1,000.00
Cleaning and clearing up yards and care of buildings	2,500.00	4,000.00	1,500.00	12,000.00	5,857.00	5,000.00	6,000.00
Attendance on fires, lights, fire engines, and apparatus	2,500.00	1,500.00	.....	5,000.00	2,452.80	50.00	7,000.00
Incidental labor, not chargeable to other appropriations	2,500.00	500.00	800.00	5,000.00	.....	2,500.00	3,500.00
Water tax and ice	.....	5,000.00	18.00	6,000.00	.....	.....	.....
Tolls and ferriage	25.00	.....	25.00	200.00	.....	.....	200.00
Pay of watchmen	4,000.00	4,000.00	2,190.00	8,000.00	1,460.00	.....	11,504.00
Flags, awnings, and packing-boxes	50.00	200.00	50.00	500.00	588.00	500.00	500.00
Rent of landings	75.00	.....	100.00	.....	.....	.....	300.00
Total	21,781.00	39,000.00	6,553.00	87,300.00	32,816.34	23,000.00	72,134.00

Object.	Pensacola.	Mare Island.	Key West.	Port Royal.	Puget Sound.	Total.
Freight and transportation	$25.00	$4,707.52	$50.00	$100.00	$100.00	$5,707.52
Printing, stationery, and advertising	232.00	1,050.00	25.00	400.00	1,000.00	6,507.00
Books, maps, models, and drawings	20.00	2,128.24	.....	100.00	500.00	8,823.24
Purchase and repair of fire engines	1,484.50	1,280.00	.....	100.00	1,000.00	9,301.50
Machinery, tools and repairs of same	195.00	6,040.00	.....	500.00	1,000.00	20,033.00
Repairs on steam engines and attendance on same	1,266.00	4,554.72	.....	200.00	5,000.00	22,845.72
Purchase and maintenance of oxen and horses, pay of hired teams, etc	1,976.59	16,783.10	.....	800.00	1,500.00	70,975.93
Carts, timber wheels, and tools of every description	608.00	2,476.88	30.00	100.00	500.00	20,282.68
Postage on letters on public service and telegrams and telephones	.....	4,131.36	60.00	250.00	50.00	5,202.36
Furniture for Government houses and offices in navy-yards	786.00	2,424.00	.....	1,700.00	5,000.00	25,258.40
Coal and other fuel for yards and docks purposes	259.50	16,315.00	.....	600.00	6,000.00	49,826.00
Candles, oil, gas, and electric lighting	378.00	.....	23.75	.....	500.00	19,254.35
Cleaning and clearing up yards and care of buildings	1,659.48	14,434.56	.....	1,200.00	4,000.00	58,151.04
Attendance on fires, lights, fire engines, and apparatus	2,425.76	11,420.48	.....	600.00	200.00	33,149.04
Incidental labor, not chargeable to other appropriations	.....	2,254.00	.....	300.00	3,000.00	20,354.00
Water tax and ice	151.20	7,560.00	73.00	3,000.00	.....	21,802.20
Tolls and ferriage	60.00	.....	.....	.....	.....	510.00
Pay of watchmen	7,504.40	2,204.60	1,995.00	2,000.00	.....	44,858.00
Flags, awnings, and packing-boxes	198.70	270.00	20.00	100.00	250.00	3,226.70
Rent of landings	.....	360.00	.....	.....	.....	835.00
Total	19,230.13	100,394.46	2,276.75	12,050.00	29,600.00	446,135.68

No. 8.—*Report showing amount expended during the fiscal year ending June 30, 1896, from appropriations pertaining to the Bureau of Yards and Docks for civilians employed on clerical duty or in any capacity than ordinary mechanics and workingmen at the several navy-yards and stations, and submitting estimate for such civilian employees for the fiscal year 1898, in compliance with the third section of naval appropriation act approved January 30, 1885 (vol. 23, Stat. L., p. 295), for a year of 365 days.*

Navy-yards and rating and rate of pay.	Amount paid to civilians employed during the fiscal year ended June 30, 1896.	Estimate for civilian employees for the fiscal year ending June 30, 1898.	
		Rate of pay.	Amount.
PORTSMOUTH, N. H.			
Clerk, at $1,400 per annum	$1,400.00	$1,400.00	$1,400.00
Mail messenger, at $2 per diem *a*	720.00	2.00	730.00
Messenger, at $600 per annum	600.00	600.00	600.00
Foreman laborer and head teamster, at $4 per diem *a*	1,464.00	4.00	1,460.00
Pilot, at $3 per diem *a*	1,077.00	3.00	1,095.00
Janitor, at $600 per annum	600.00	600.00	600.00
Total	5,861.00		5,885.00
BOSTON, MASS.			
Clerk, at $1,400 per annum	1,400.00	1,200.00	1,400.00
Foreman laborer, at $4 per diem	1,236.00	4.00	1,252.00
Messenger to commandant, at $1.76 per diem	543.84	1.76	550.88
Messenger, at $1.76 per diem	547.36	1.76	550.88
Mail messenger, at $2 per diem *a*	732.00	2.00	730.00
Writer, at $900 per annum	895.06	900.00	900.00
Master of tugs, at $1,200 per annum		1,200.00	1,200.00
Draftsman, at $4.56 per diem	1,410.00		
Electrician, at $4 per diem	1,404.00		
Clerk, labor board, at $2.80 per diem	218.40		
Total	8,387.41		6,583.76
BROOKLYN, N. Y.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Writer, at $1,017.25 per annum	1,017.00	1,017.25	1,017.25
Two masters of tugs, at $1,500 each per annum	3,000.00	1,500.00	3,000.00
Two writers, at $900 each per annum	1,800.00	900.00	900.00
Foreman laborer, at $4.50 per diem		4.50	1,408.50
Mail messenger, at $2 per diem *a*	732.00	2.00	730.00
Two messengers, at $2.25 each per diem	1,382.00	2.25	1,408.50
Draftsman, at $5 per diem	1,565.00	5.00	1,565.00
Quarterman at $3 per diem	946.50	3.00	939.00
Superintendent of teams or quarterman, at $4 per diem	1,216.00	4.00	1,252.00
Messenger to commandant, at $2.25 per diem *a*	821.25	2.25	821.25
Electrician, at $1,200 per annum	200.00	1,200.00	1,200.00
Leveler, at $4 per diem	1,246.00		
Two rodmen, at $3 per diem	1,499.25		
Subinspector, at $2.50 per diem	1,095.24		
Mechanical draftsman, at $4 per diem	776.00		
Ten subinspectors, at $4 per diem	9,863.50		
Timber inspector, at $4 per diem	450.00		
Four roundsmen, at $3 per diem	4,395.00		
Total	34,407.61		16,541.50
SACKETS HARBOR, N. Y.			
Ship keeper, at $1 per diem	365.00	1.00	365.00
LEAGUE ISLAND, PA.			
Clerk, at $1,400 per annum	1,399.97	1,400.00	1,400.00
Writer and telegraph operator, at $1,000	999.98	1,000.00	1,000.00
Messenger, at $2 per diem	628.00	2.00	626.00
Forman laborer, at $4 per diem	1,051.00	4.00	1,251.00
Leveler, at $3.84 per diem	1,201.84		
Subinspector, at $3.50 per diem	1,009.50		
Draftsman, at $5 per diem	1,375.00		
Three special laborers, first class, at $2.56 per diem	2,434.86		
Special laborer, third class, at $2 per diem	580.00		
Special laborer, messenger, at $1.84 per diem	567.64		
Total	11,247.79		4,278.00

a Including Sundays.

No. 8.—*Report showing amount expended during the fiscal year, etc.*—Continued.

Navy-yards and rating and rate of pay.	Amount paid to civilians employed during the fiscal year ended June 30, 1896.	Estimate for civilian employees for the fiscal year ending June 30, 1898.	
		Rate of pay.	Amount.
WASHINGTON, D. C.			
Clerk, at $1,400 per annum		$1,400.00	$1,400.00
Messenger, at $2 per diem		2.00	626.00
Foreman laborer, at $4 per diem		4.00	1,252.00
Electrician, at $1 200 per annum		1,200.00	1,200.00
Draftsman, at $5 per diem, submitted		5.00	1,565.00
Special laborer, clerk, at $3 per diem	$943.87		
Trackman, at $3.04 per diem	993.34		
Special laborer, at $2 per diem	607.50		
Special mechanic, at $3.28 per diem	960.22		
Special mechanic, at $3.04 per diem	941.60		
Special mechanic, at $3.04 per diem	945.82		
Quarterman, at $3 50 per diem	1,078.00		
Special laborer, at $2 per diem	624.00		
Total	11,279.35		6,043.00
NORFOLK, VA.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Writer, at $1,017.25 per annum	1,017.25	1,017.25	1,017.25
Writer, at $1,000 per annum	1,000.00	1,000.00	1,000.00
Foreman laborer, at $4 per diem	1,256.00	4.00	1,252.00
Mail messenger at $2 per diem *a*	732.00	2.00	730.00
Two messengers, at $2 each per diem	1,256.00	2.00	1,252.00
Pilot, at $2.26 per diem	709.64	2.26	707 33
Electrician, at $1,200 per annum	1,200.00	1,200.00	1,200.00
Draftsman, at $5.04 per diem	1,582.56		
Two draftsmen, at $4 and $3.04 per diem	981.52		
Quarterman mason, at $4.50 per diem	1,049.63		
Quarterman, at $3.56 per diem	1,168.89		
Skilled laborer, clerk labor board, at $3.26 per diem	166.22		
Two special laborers, at $2.80 per diem	726.80		
Special laborer, at $2.48 per diem	109.12		
Four special laborers, at $2 per diem	1,989.00		
Total	16,544.63		8,558.63
PENSACOLA, FLA.			
Clerk, at $1,200 per annum	1,200.00	1,200.00	1,200.00
Mail messenger, at $2 per diem	732.00	2.00	730.00
Total	1,932.00		1,930.00
PORT ROYAL, S. C.			
Clerk, at $1,200 per annum, submitted	1,200.00	1,200.00	1,200.00
Messenger and janitor, at $1.50 per diem, submitted *a*		1.50	547.50
Rodman and inspector, at $3 per diem, submitted		3.00	939.00
Draftsman, at $4 per diem	717.00		
Skilled labor, at $2.48 per diem	134.60		
Inspector of dredging, at $2.40 per diem	232.20		
Inspector of dumping, at $2 per diem	86.00		
Total	3,056.60		2,686.50
KEY WEST, FLA.			
Messenger, at $600 per annum	600.00	600.00	600.00
MARE ISLAND, CAL.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Writer, at $1.017.25 per annum	1,017.25	1,017.25	1,017.25
Foreman laborer, at $6 per diem	1,842.00	6.00	1,878.00
Foreman laborer, at $5.50 per diem	1,694.00	5.50	1,721.50
Pilot, at $4.80 per diem	1,507.00	4.80	1,502.40
Draftsman, at $5 per diem	1,560.00	5.00	1,565.00
Mail messenger, at $2 per diem *a*	732.00	2.00	730.00
Messenger, at $2 per diem	628.00	2.00	626.00
Electrician, at $1,200 per annum	1,200.00	1,200.00	1,200.00
Messenger and lamplighter, at $2 per diem	400.00	2.00	626.00

a Including Sunday.

No. 8.—*Report showing amount expended during the fiscal year, etc.*—Continued.

Navy-yards and rating and rate of pay.	Amount paid to civilians employed during the fiscal year ended June 30, 1896.	Estimate for civilian employees for the fiscal year ending June 30, 1898.	
		Rate of pay.	Amount.
MARE ISLAND, CAL.—continued.			
Machinist in charge, at $4.50 per diem	$1,401.15	.....	.....
Quarterman joiner, at $4.24 per diem	1,310.15	.....	.....
Janitor, at $4.48 per diem	778.72	.....	.....
Stable keeper, at $3.50 per diem	1,281.00	.....	.....
Roundsman, at $3.04 per diem	1,112.64	.....	.....
Roundsman, at $3 per diem	1,098.00	.....	.....
Special laborer, commandant's office, at $3.28 per diem	1,028.28	.....	.....
Special laborer, commandant's office, at $1.50 per diem	424.50	.....	.....
Special laborer, yards and docks office, at $3.04 per diem	919.60	.....	.....
Special laborer, yards and docks office, at $2.48 per diem	778.72	.....	.....
Special laborer, general storekeeper's office, at $3.04 per diem	161.12	.....	.....
Special laborer, general storekeeper's office, at $2.48 per diem	97.28	.....	.....
Special laborer, board of inspection, at $3.28 per diem	249.39	.....	.....
Chemist, board of inspection, at $4 per diem	204.00	.....	.....
Total	22,914.80	.....	$12,266.15
PORT ORCHARD, PUGET SOUND, WASH.			
Clerk, at $1,200 per annum, submitted	.....	$1,200.00	1,200.00
Rodman, at $3.50 per diem, submitted	425.25	3.50	1,095.50
Messenger and janitor, at $1.76 per diem, submitted *a*	.....	1.76	642.40
Draftsman, at $5 per diem	1,573.75	.....	.....
8 subinspectors, at $4.56 and $3.50 per diem	2,805.43	.....	.....
Special laborer, at $3.25 per diem	1,018.88	.....	.....
Photographer, at $4 per diem	60.00	.....	.....
Total	5,883.31	.....	2,937.90

a Including Sundays.

Recapitulation of expenditures for certain employees for the fiscal year ended June 30, 1896, with estimates for the fiscal year ending June 30, 1898, per act approved January 30, 1885 (Stat. L., vol. , p. 295).

Navy-yards and stations.	Expenditures, 1895–96.	Estimates, 1897–98.
Portsmouth, N. H.	$5,861.00	$5,885.00
Boston, Mass.	8,387.41	6,583.76
Brooklyn, N. Y.	34,407.61	16,541.50
Sacket Harbor, N. Y.	365.00	365.00
League Island, Pa.	11,247.79	4,278.00
Washington, D. C.	11,279.35	6,043.00
Norfolk, Va.	16,544.63	8,558.63
Port Royal, S. C.	3,056.60	2,686.50
Pensacola, Fla.	1,932.00	1,930.00
Key West, Fla.	600.00	600.00
Mare Island, Cal.	22,914.80	12,266.15
Port Orchard, Wash.	5,883.31	2,937.90
Total	112,499.50	68,675.44
SUBMITTED.		
Washington, D. C.:		
Draftsman, at $5 per diem	.....	1,565.00
Port Royal, S. C.:		
Clerk, at $1,200 per annum	.....	1,200.00
Messenger and janitor, at $1.50 per diem *a*	.....	547.50
Rodman and inspector, at $3 per diem	.....	939.00
Port Orchard, Wash.:		
Clerk, at $1,200 per annum	.....	1,200.00
Rodman and inspector, at $3.50 per diem	.....	1,095.50
Messenger and janitor, at $1.76 per diem *a*	.....	642.40
Total submitted and included in estimates	.....	7,189.40

a Including Sundays.

No. 9.—*Statement of the appropriations for the Bureau of Yards and Docks for the fiscal year ended June 30, 1896, and prior years, showing the amounts expended under each specific head of appropriation and the balances remaining unexpended June 30, 1896, as required by section 429, Revised Statutes.*

Appropriation for general maintenance, 1896	$250,000.00
Expended from July 1, 1895, to June 30, 1896	231,579.67
Balance on hand July 1, 1896	18,420.33
Which will be entirely expended.	
Appropriation for repairs and preservation, 1896	400,000.00
Expended from July 1, 1895, to June 30, 1896	349,604.03
Balance on hand July 1, 1896	50,395.97
Which will be entirely expended.	
Appropriation for civil establishment, 1896	61,597.37
Expended from July 1, 1895, to June 30, 1896	57,245.70
Balance on hand July 1, 1896	4,351.67
Which will revert to the Treasury.	
Appropriation for contingent, 1896	15,000.00
Expended from July 1, 1895, to June 30, 1896	14,549.05
Balance on hand July 1, 1896	450.95
After liabilities are paid, balance will revert to Treasury.	
Appropriation for Naval Home, Philadelphia, 1896	79,315.00
Expended from July 1, 1895, to June 30, 1896	59,987.11
Balance on hand July 1, 1896	19,327.89
After liabilities are paid, balance will revert to Treasury.	
Appropriation, navy-yard, Portsmouth, N. H.:	
For coal pocket	6,500.00
For construction of boiler house for buildings Nos. 45 and 46	7,000.00
For construction of boiler house for building No. 10	15,000.00
	28,500.00
Expended from July 1, 1892, to June 30, 1896	19,084.86
Balance on hand July 1, 1896	9,415.14
Which will be entirely expended.	
Appropriation, navy-yard, Boston, Mass.:	
For construction steel shears	12,000.00
Expended from July 1, 1891, to June 30, 1896	11,744.86
Balance on hand July 1, 1896	255.14
Appropriation, navy-yard, Boston, Mass.:	
To complete the electric-light plant at the Boston Navy-Yard, including U. S. S. *Wabash*	1,500.00
Expended from July 1, 1895, to June 30, 1896	1,493.63
Balance on hand July 1, 1896	6.37
Appropriation, navy-yard, Brooklyn, N. Y.:	
For extension and improvements	593,860.33
Expended from July 1, 1892, to June 30, 1896 ($20,000 being in the hands of paymaster at New York)	487,235.78
Balance on hand July 1, 1896	106,624.55
Which will be entirely expended.	

Appropriation, navy-yard, Brooklyn, N. Y.:	
For caisson for granite dock	$35,000.00
For renewing buildings Nos. 114, 115, and 116 (construction and repair)	70,000.00
For grading, paving, and laying of sewers	10,000.00
For quay wall inside Whitney Basin	25,000.00
	140,000.00
Expended from July 1, 1894, to June 30, 1896	75,580.94
Balance on hand July 1, 1896	64,419.06
Which will be entirely expended.	
Appropriation, navy-yard, Brooklyn, N. Y.:	
For repairs and improvements	300,000.00
Expended from July 1, 1893, to June 30, 1896	234,223.25
Balance on hand July 1, 1896	65,776.75
Which will be entirely expended.	
Appropriation, navy-yard, Brooklyn, N. Y.:	
For pumping plant for granite dock	40,000.00
For grading, paving, sidewalks, and sewers	10,000.00
For rebuilding construction and repair shipwright shed No. 44	6,534.00
For putting equipment paint shop in good condition	3,575.00
For dredging	55,000.00
For quay wall in Whitney Basin	25,000.00
For heating apparatus for equipment rigging loft	1,286.00
For extension of railroad system	10,000.00
	151,395.00
Expended from July 1, 1895, to June 30, 1896	82,807.00
Balance on hand July 1, 1896	68,588.00
Which will be entirely expended.	
Appropriation, navy-yard, League Island, Pa.:	
For dredging and filling in	75,000 00
For dredging and filling in and paving and improvement of grounds	25,000.00
For extending permanent sea wall	25,000.00
For west dry-dock pier	87,441.62
For ripraps for protection wall	9,150.00
For construction of light retaining wall	25,000.00
For sewers and flushing tank	5,685.00
	252,276.62
Expended from July 1, 1890, to June 30, 1896	252,276.62
Appropriation, navy-yard, League Island, Pa.:	
For extension of protection wall	20,000.00
For extension of light retaining wall	15,000.00
For ripraps for Board street wharf	6,500.00
For branch sewer	2,100.00
	43,600.00
Expended from July 1, 1892, to June 30, 1896	43,600.00
Appropriation, navy-yard, League Island, Pa.:	
For construction of sea wall	20,000.00
For 1 pair shear legs	18,000.00
Toward the construction of east dry dock pier	40,000.00
	78,000.00
Expended from July 1, 1893, to June 30, 1896	78,000.00

Appropriation, navy-yard, League Island, Pa.:	
For continuation of sea wall	$20,000.00
For completion of shear legs	11,900.00
For an electric-light plant, completed	10,000.00
For completing east dry-dock pier	40,000.00
	81,900.00
Expended from July 1, 1894, to June 30, 1896	74,063.26
Balance on hand July 1, 1896	7,836.74
Which will be entirely expended.	
Appropriation, navy-yard, League Island, Pa.:	
For continuation of sea wall	20,000.00
For dredging, completed	10,000.00
For artesian wells	9,000.00
For sidewalks, completed	3,500.00
For 1 deck scow, completed	2,000.00
	44,500.00
Expended from July 1, 1895, to June 30, 1896	23,939.60
Balance on hand July 1, 1896	20,560.40
Appropriation, navy-yard, Washington, D. C.:	
For new timber shed for ordnance purposes	7,500.00
For conversion of mold-loft building into a forge shop	8,000.00
For reconstruction of forge shop, with foundations for crane columns	10,000.00
For installation of electric lights in breech-mechanism shop	2,500.00
For locomotive wrecking car	7,500.00
For retaining wall for and raising lower floors, store No. 10	10,915.00
For completing conversion of mold-loft building into forge shop	6,936.00
	53,351.00
Expended from July 1, 1893, to June 30, 1896	53,351.00
Appropriation, navy-yard, Washington, D. C.:	
For 1 wrecking car, with 15-ton crane attachment	2,500.00
For extension of yard wall through marsh	24,693.00
	27,193.00
Expended from July 1, 1893, to June 30, 1896	25,975.02
Balance on hand July 1, 1896	1,217.98
Which will be entirely expended.	
Appropriation, navy-yard, Washington, D. C.:	
For extension of quay wall, completed	4,569.00
For extension of railroad track to store No. 2, completed	3,250.00
For roundhouse for yard locomotive and wrecking car, completed	4,500.00
For extension of electric-light plant, completed	5,000.00
For hydrants to conform to city standard, completed	1,560.00
For new iron roof for foundry	33,000.00
	51,879.00
Expended from July 1, 1895, to June 30, 1896	18,879.00
Balance on hand July 1, 1896	33,000.00
Which will be entirely expended.	
Appropriation, navy-yard, Norfolk, Va.:	
For floating gate for granite dry dock	25,000.00
For coal shed	6,500.00
For extension of quay wall	15,000.00
For extension of water system	8,000.00
For extension of electric plant	8,000.00
For sewers, drains, and water-closets in offices and shops	15,000.00
For continuing quay wall	15,000.00
	92,500.00
Expended from July 1, 1893, to June 30, 1896	92,500.00

Appropriation, navy-yard, Norfolk, Va.:	
For construction of a fireproof storehouse to replace storehouse number 15, destroyed by fire December, 1895	$72,365.77
Expended from July 1, 1894, to June 30, 1896	68,094.12
Balance on hand July 1, 1896	4,271.65
Which will be expended.	
Appropriation, navy-yard, Norfolk, Va.:	
For extension of quay wall	20,000.00
For land lighter	2,000.00
For derrick car, completed	1,000.00
For repairs to granite dock	15,000.00
For one deck scow	2,000.00
For dredging in front of the navy-yard dock, completed	6,012.00
	46,012.00
Expended from July 1, 1895, to June 30, 1896	40,747.40
Balance on hand July 1, 1896	5,264.60
Which will be entirely expended.	
Appropriation, construction of dock, Port Royal, S. C.:	
Toward the construction of a timber dry dock	200,000.00
To continue the construction of a timber dry dock	150,000.00
For the completion of a timber dry dock	150,000.00
	500,000.00
Expended from July 1, 1890, to June 30, 1896	499,609.03
Balance on hand July 1, 1896	390.97
Which will be entirely expended.	
Appropriation for telephone line (under construction of dock)	1,500.00
Expended from July 1, 1892, to June 30, 1896	1,500.00
Appropriation, naval station, Port Royal, S. C.:	
For sewage	846.00
For officers' quarters, $2,000 and $5,000 transferred	12,000.00
For boathouse	1,000.00
For barn	750.00
For completing officers' quarters heretofore authorized	2,500.00
	17,096.00
Expended from July 1, 1893, to June 30, 1896	17,096.00
Appropriation, naval station, Port Royal, S. C:	
For repairs to main wharf	18,368.00
Expended from July 1, 1894, to June 30, 1896	18,107.64
Balance on hand July 1, 1896	260.36
Which will be entirely expended.	
Appropriation, naval station, Port Royal, S. C.:	
For roadways, completed	5,572.00
For grading and drainage, completed	6,000.00
For extension of hydrant system, completed	1,385.00
For boundary fence, completed	1,200.00
For storage cistern, completed	3,758.00
For construction and repair shop	60,000.00
	77,915.00
Expended from July 1, 1895, to June 30, 1896	17,915.00
Balance on hand July 1, 1896	60,000.00
Which will be entirely expended.	

Appropriation, dry dock, Algiers, La.:	
Toward the establishment of a dry dock on the Government reservation near Algiers, La	$25,000.00
For the purpose of completing the purchase of additional lands necessary for the establishment of a dry dock at Algiers, La	23,025.03
	48,025.03
Expended from July 1, 1893, to June 30, 1896	46,312.83
Balance on hand July 1, 1896	1,712.20
Which will be entirely expended.	
Appropriation, naval station, Key West, Fla.:	
For coaling shed	14,000.00
For purchase of lot for coal shed, concluded	20,000.00
For coaling pier	40,000.00
	74,000.00
No expenditures have been made for coaling shed and coaling pier up to June 30, 1896.	
Balance on hand July 1, 1896	54,000.00
Appropriation, adjustable stern dock for naval station, Key West, Fla.	30,000.00
Expended from July 1, 1889, to June 30, 1896	27,000.00
Balance on hand July 1, 1896	3,000.00
Which is held to pay reservation under contract.	
Appropriation, increase of the Navy:	
For one traveling crane of 40 tons capacity, for dry dock at navy-yard, Mare Island, Cal	60,000.00
Expended from July 1, 1892, to June 30, 1896	60,000.00
Appropriation, navy-yard, Mare Island, Cal.:	
For extension of quay wall	80,000.00
Expended from July 1, 1891, to June 30, 1896	80,000.00
Appropriation, navy-yard, Mare Island, Cal.:	
For one 12-ton pillar wharf crane	3,800.00
Expended from July 1, 1890, to June 30, 1896	2,032.00
Balance on hand July 1, 1896	1,768.00
Which will be entirely expended.	
Appropriation, navy-yard, Mare Island, Cal.:	
For navy-yard roads, completed	5,000.00
For cottage for electrician, completed	1,937.00
Expended from July 1, 1894, to June 30, 1896	6,937.00
Appropriation, navy-yard, Mare Island, Cal.:	
For extending yard railroads	18,332.00
For shed over galvanized plant, construction and repair	3,750.00
	22,082.00
Expended from July 1, 1894, to June 30, 1896	18,710.16
Balance on hand July 1, 1896	3,371.84
Appropriation, navy-yard, Mare Island, Cal.:	
For enlarging entrance to stone dry dock	20,736.00
For new caisson for stone dry dock	53,000.00
For extension of quay wall toward coal shed, completed	10,000.00
For dredging, completed	10,000.00
For three steam capstans for dry dock, completed	5,971.00
For railroad scales, completed	1,640.00
For improvement coppersmith shop, steam engineering	4,527.00
For yard roads	5,000.00
	110,874.00
Expended from July 1, 1895, to June 30, 1896	36,627.33
Balance on hand July 1, 1896	74,246.67

Appropriation, dry dock, Puget Sound, Washington:	
For purchase of tract of land for dry-dock site, and construction of dry dock upon said land	$210,000.00
To continue the construction of the dry dock	225,000.00
To continue the construction of dry dock at Port Orchard, and for erecting office buildings and other necessary structures, approaches to dry dock quarters for civil engineer and inspector, pay of superintendents, inspectors, and draftsman, necessary dredging, clearing and cleaning up station, incidental expenses, unforseen emergencies, and contingent expenses	45,000.00
For construction of dry dock, dredging, office buildings, and officers' quarters, to be made immediately available	260,000.00
	740,000.00
Expended from July 1, 1891, to June 30, 1896	680,471.79
Balance on hand July 1, 1896	59,528.21
Which will be entirely expended.	
Appropriation, naval station, Puget Sound, Washington:	
For artesian well	3,500.00
Entire appropriation expended June 30, 1896, without result.	
Naval station, Pago Pago, Samoa:	
For the purpose of permanently establishing a station for coal and other supplies for the naval and commercial marine of the United States, on the shores of the bay of the harbor of Pago Pago in the island of Tutuilla, Samoa, for the erection of the necessary buildings and structures thereon, and for such other purposes as may, in the judgment of the President, be necessary to confirm the rights of the United States and the King of the Samoan Islands, and the deed of transfer made in accordance therewith, one hundred thousand dollars, to be immediately available	100,000.00
Coaling station, Pago Pago, Samoa:	
That the expenses incurred in the purchases, shipment, and discharge of coal for the naval station at Pago Pago, island of Tutuilla, Samoa, amounting to the sum of thirty-six thousand and forty-one dollars and eighty-seven cents, shall be paid from the appropriation of one hundred thousand dollars for the purpose of permanently establishing a station for coal and other supplies for the naval and commercial marine of the United States made by the act approved March second, eighteen hundred and eighty-nine.	
Expended from July 1, 1889, to June 30, 1896	43,019.67
Balance on hand July 1, 1896	56,980.33

No. 10.—*Abstract and statement of offers received for the construction of works of improvement, including labor and material, coming under the cognizance of the Bureau of Yards and Docks, as required by section 429, Revised Statutes, for fiscal year ending June 30, 1896.*

List of tenders received under Bureau's advertisement dated July 8, 1895, for extension of electric light plant at United States navy-yard, Washington, D. C.:	
Lake & Williams	$3,833.00
McCay Howard Eng. Co	5,690.00
E. S. Morgan	3,945.00
Royce & Marean *a*	3,564.38
S. D. Warfield Co	5,478.00
(Special appropriation act approved March 2, 1895.)	
List of tenders received under Bureau's advertisement dated July 10, 1895, for construction of quay wall inside Whitney Basin at United States navy-yard, Brooklyn, N. Y.:	
Colin McLean, per linear foot	104.95
Stratford & Hawkes	93.50
Benner & Opdyke (about 316 linear feet) *a*	86.22
(Special appropriation act approved March 2, 1895.)	

a Accepted.

List of tenders received under Bureau's advertisement dated July 10, 1895, for reconstructing building No. 115 at United States navy-yard, Brooklyn, N. Y.:

Justin McCarthy	$44,296.40
P. J. Carlin & Co.	43,800.00
M. Gibbons & Son	44,873.00
Youngstown Bridge Co	42,594.00
J. J. & D. S. Leonard	44,462.00
Thomas Dwyer *a*	38,700.00
Jas. R. F. Kelly & Co.	42,896.00
Benner & Opdyke	43,566.00

(Special appropriation act approved July 26, 1894.)

Under Bureau's advertisement dated July 31, 1896, inviting proposals for telephones and switchboards for the various navy-yards no tenders were received.

List of tenders received under Bureau's advertisement dated November 12, 1896, for drilling an artesian well and the supplying and installation of pump, steel tower, and a covered steel storage tank in connection therewith, at United States navy-yard, League Island:

Waring Prindle Pump Co. *b*	$9,000.00
Manhattan Supply Co.	6,211.00
Do	6,111.00

(Special appropriation act approved March 2, 1895. No award made.)

List of tenders received under Bureau's advertisement dated December 30, 1895, for rebuilding construction and repair shipwrights' shed No. 44 at the United States navy-yard, Brooklyn, N. Y.:

Youngstown Bridge Company	7,400.00
The King Bridge Company	8,100.00
Thomas Dwyer	8,420.00
J. R. F. Kelly	6,850.00
J. R. F. Kelly, amended bid *a*	6,534.00
Mahony Bros	9,370.00

(Special appropriation act approved March 2, 1895.)

Under Bureau's advertisement dated December 30, 1895, inviting proposals for coaling shed at United States naval station, Key West, Fla., no bids were received. (Special appropriation act approved July 26, 1894.)

List of tenders received under Bureau's advertisement dated January 6, 1896, for drilling an artesian well, etc., at United States navy-yard, League Island, Pa.:

P. H. & J. Conlan, amount per foot for completed well, $4.50 *a*	$5,330.00
P. H. & J. Conlan	4,800.00
Do.	4,775.00
Do.	4,250.00
Thos. B. Harper, amount per foot for completed well, $4.25	6,550.00
Thos. B. Harper	6,069.00
Do.	6,250.00
Waring Prindle Pump Company	9,000.00
H. S. Stewart, reduction of $2 per foot for each and every foot under 1,200 feet depth to which the well is drilled	15,931.00
Tippett & Wood	2,869.00
Do. *b*	2,538.00

(Special appropriation act approved March 2, 1895.)

List of tenders received under Bureau's advertisement dated April 24, 1896, for construction and repair shop at United States naval station, Port Royal, S. C.:

D. Getaz	57,493.00
John H. McKenzie	57,980.00
B. F. Kramer	53,250.00
Theo. O. Brown	61,000.00
Gude & Walker	55,400.00
L. P. Hazen & Co. *a*	49,100.00
Morrow Bros	55,790.00
R. H. Hood	69,431.00
R. H. Hood, conditional A	53,948.00
R. H. Hood, conditional B	59,988.00
R. H. Hood, conditional C	60,000.00
Geo. W. Corbett	60,000.00

(Special appropriation act approved March 2, 1895.)

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a Accepted. *b* Informal.

List of tenders received under Bureau's advertisement, dated May 18, 1896, for new roof, Building No. 11, construction smithery, at United States navy-yard, Brooklyn, N. Y.

	Entire roof erected complete.	Complete, but not erected.
Thomas Dwyer	$30,724	$25,720
The King Bridge Co. *a*	30,354	21,720
Benner & Opdyke	34,175	.....
Buffalo Bridge and Iron Works	53,000	27,800
Port & McCord	34,265	.....

a Accepted.

(Appropriation repairs and preservation acts approved March 2, 1895, and June 10, 1896.)

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Yards and Docks, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditures.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
MAINTENANCE, YARDS AND DOCKS, 1898.			
For general maintenance of yards and docks, namely: For freight, transportation of materials and stores; books, maps, models, and drawing; purchase and repair of fire engines; machinery; repairs on steam fire engines and attendance on the same; purchase and maintenance of oxen, horses, and driving teams; carts, timber wheels, and vehicles for use in the navy-yards; tools and the repairs of the same; postage on letters and other mailable matter on public service sent to foreign countries, and telegrams; stationery; furniture for Government houses and offices in navy-yards; coal and other fuel, candles, oil, and gas; cleaning and clearing up yards and care of buildings; attendance on fires, lights, fire engines, and apparatus; incidental labor at navy-yards; water tax, tolls, and ferriage; rent of four officers' quarters at Philadelphia, Pa.; pay of watchmen in navy-yards; awnings and packing boxes, advertising for yards and docks, and other purposes (act June 10, 1896); for rent of wharf and storehouse at Erie, Pa., for use and accommodation of U. S. S. Michigan (submitted).	$300,000.00	$300,000.00	$265,000.00
CONTINGENT, YARDS AND DOCKS, 1898.			
For contingent expenses that may arise at navy-yards and stations (act June 10, 1896)	15,000.00	15,000.00	15,000.00
REPAIRS AND PRESERVATION NAVY-YARDS, 1898.			
For repairs and preservation at navy-yards and stations (act June 10, 1896)	400,000.00	400,000.00	400,000.00
NAVAL HOME, PHILADELPHIA, PA., 1898.			
One superintendent (act June 10, 1896)	600.00		
One steward (act June 10, 1896)	480.00		
One matron (act June 10, 1896)	360.00		
One chief cook (act June 10, 1896)	360.00		
One assistant cook (act June 10, 1896)	240.00		
One assistant cook (act June 10, 1896)	180.00		
One chief laundress (act June 10, 1896)	192.00		
Five laundresses, at $168 each per annum (act June 10, 1896)	840.00		
Four scrubbers, at $168 each per annum (act June 10, 1896)	672.00		
One head waiter (act June 10, 1896)	192.00		
Eight waitresses, at $168 each per annum (act June 10, 1896)	1,344.00		
One scullion, at $200 per annum submitted)	200.00		
Eight laborers, at $240 each per annum act June 10, 1896)	1,920.00		
One stable keeper and driver (act June 10, 1896)	360.00		
One master at arms (act June 10, 1896)	480.00		
Two house corporals, at $300 each per annum (act June 10, 1896)	600.00		
One barber (act June 10, 1896)	360.00		
One carpenter (act June 10, 1896)	845.00		
One painter (act June 10, 1896)	600.00		
One engineer to run elevator (act June 10, 1896)	600.00		
		11,425.00	11,225.00

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditures.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
NAVAL HOME, PHILADELPHIA, PA., 1898—continued.			
For water rent and lighting	$2,400.00		
For cemetery, burial expenses, and headstones	350.00		
For improvement of grounds	700.00		
For repairs to buildings, furnaces, grates, ranges, furniture, and repairs of furniture	7,000.00		
For music in chapel	600.00		
For transportation of indigent and destitute beneficiaries to the Naval Home	500.00		
		$11,550.00	$11,350.00
For support of beneficiaries	55,750.00	55,750.00	58,950.00
		78,725.00	70,725.00
CIVIL ESTABLISHMENT, YARDS AND DOCKS, 1898.			
Navy-yard, Portsmouth, N. H.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One mail messenger, at $2 per diem * (act June 10, 1896)	730.00		
One messenger, at $600 per annum (act June 10, 1896)	600.00		
One foreman laborer and head teamster, at $4 per diem * (act June 10, 1896)	1,460.00		
One pilot, at $3 per diem * (act June 10, 1896)	1,095.00		
One janitor, at $600 per annum (act June 10, 1896)	600.00		
		5,885.00	5,885.00
Navy-yard, Boston, Mass.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One foreman laborer, at $4 per diem (act June 10, 1896)	1,252.00		
One messenger to commandant, at $1.76 per diem (act June 10, 1896)	550.88		
One messenger, at $1.76 per diem (act June 10, 1896)	550.88		
One mail messenger, at $2 per diem * (act June 10, 1896)	730.00		
One writer, at $900 per annum (act June 10, 1896)	900.00		
One master of tugs, at $1,200 per annum (act June 10, 1896)	1,200.00		
		6,583.76	6,583.76
Navy-yard, Brooklyn, N. Y.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One writer, at $1,017.25 per annum (act June 10, 1896)	1,017.25		
Two masters of tugs, at $1,500 each per annum (act June 10, 1896)	3,000.00		
Two writers, at $900 each per annum (act June 10, 1896)	1,800.00		
One foreman laborer, at $4.50 per diem (act June 10, 1896)	1,408.50		
One mail messenger, at $2 per diem * (act June 10, 1896)	730.00		
Two messengers, at $2.25 each per diem (act June 10, 1896)	1,408.50		
One draftsman, at $5 per diem (act June 10, 1896)	1,565.00		
One quarterman, at $3 per diem (act June 10, 1896)	939.00		
One superintendent of teams, or quarterman, at $4 per diem (act June 10, 1896)	1,252.00		
One messenger to commandant, at $2.25 per diem * (act June 10, 1896)	821.25		
One electrician, at $1,200 per annum (act June 10, 1896)	1,200.00		
		16,541.50	16,541.50
Naval station, Sacket Harbor, N. Y.:			
One ship keeper, at $365 per annum (act June 10, 1896)	365.00		
		365.00	365.00
Navy-yard, League Island, Pa.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One writer and telegraph operator, at $1,000 per annum (act June 10, 1896)	1,000.00		
One messenger, at $2 per diem (act June 10, 1896)	626.00		
One foreman laborer, at $4 per diem (act June 10, 1896)	1,252.00		
		4,278.00	4,278.00
Navy-yard, Washington, D. C.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One messenger, at $2 per diem (act June 10, 1896)	626.00		
One foreman laborer, at $4 per diem (act June 10, 1896)	1,252.00		
One electrician, at $1,200 per annum (act June 10, 1896)	1,200.00		
One draftsman, at $5 per diem (submitted)	1,565.00		
		6,043.00	4,478.00
Navy-yard, Norfolk, Va.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One writer, at $1,017.25 per annum (act June 10, 1896)	1,017.25		
One writer, at $1,000 per annum (act June 10, 1896)	1,000.00		
One foreman laborer, at $4 per diem (act June 10, 1896)	1,252.00		
One mail messenger, at $2 per diem * (act June 10, 1896)	730.00		
Two messengers, at $2 per diem (act June 10, 1896)	1,252.00		
One pilot, at $2.26 per diem (act June 10, 1896)	707.38		
One electrician, at $1,200 per annum (act June 10, 1896)	1,200.00		
		8,558.63	8,558.63

* Including Sundays.

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditures.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
CIVIL ESTABLISHMENT, YARDS AND DOCKS, 1898—cont'd.			
Navy-yard, Pensacola, Fla.:			
One clerk, at $1,200 per annum (act June 10, 1896)	$1,200.00		
One mail messenger, at $2 per diem* (act June 10, 1896)	730.00		
		$1,930.00	$1,930.00
Navy-yard, Mare Island, Cal.:			
One clerk, at $1,400 per annum (act June 10, 1896)	1,400.00		
One writer, at $1,017.25 per annum (act June 10, 1896)	1,017.25		
One foreman mason, at $6 per diem (act June 10, 1896)	1,878.00		
One foreman laborer, at $5.50 per diem (act June 10, 1896)	1,721.50		
One pilot, at $4.80 per diem (act June 10, 1896)	1,502.40		
One draftsman, at $5 per diem (act June 10, 1896)	1,565.00		
One mail messenger, at $2 per diem* (act June 10, 1896)	730.00		
One messenger, at $2 per diem (act June 10, 1896)	626.00		
One electrician, at $1,200 per annum (act June 10, 1896)	1,200.00		
One messenger and lamplighter, at $2 per diem (act June 10, 1896)	626.00		
		12,266.15	12,266.15
Naval station, Key West, Fla.:			
One mail messenger, at $600 per annum (act June 10, 1896)	600.00		
		600.00	600.00
Naval station, Puget Sound, Wash.:			
One clerk, at $1,200 per annum (submitted)	1,200.00		
One rodman and inspector, at $3.50 per diem (submitted)	1,095.50		
One messenger and janitor, at $1.75 per diem* (submitted)	642.40		
		2,937.90	
Naval station, Port Royal, S. C.:			
One clerk, at $1,200 per annum (submitted)	1,200.00		
One rodman and inspector at $3 per diem* (submitted)	939.00		
One messenger and janitor, at $1.50 per diem* (submitted)	547.50		
		2,686.50	
NAVY-YARDS AND STATIONS.		68,675.44	61,486.04
Navy-yard, Boston, Mass.:			
For swinging gates for dry dock (submitted)	10,000.00		
For additional culverts in caisson for filling dry dock (submitted)	4,500.00		
		14,500.00	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			9,000.00
Navy-yard, Brooklyn, N. Y.:			
For dredging Whitney Basin and Wallabout Channel (total estimate, $186,000) (submitted)	40,000.00		
For quay wall, Whitney Basin (submitted)	18,000.00		
For removal of construction and repair foundry and erection of central boiler house and coal bin (submitted)	22,542.00		
For supplying and erection of 10 boilers and piping (submitted)	31,500.00		
For quay wall, Wallabout Channel (submitted)	10,000.00		
For building for storage of ship's steel (submitted)	20,000.00		
For coal shed for dry dock (submitted)	5,000.00		
For grading and sewering between dry dock and Clinton avenue (total estimate, $28,000) (submitted)	10,000.00		
For grading and paving streets (submitted)	5,000.00		
For latrines (submitted)	18,000.00		
For addition to electric plant (submitted)	12,000.00		
For flushing culverts in causeway (to be immediately available) (submitted)	25,000.00		
		217,042.00	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			135,000.00
Navy-yard, League Island, Pa.:			
For new coping for dry dock (submitted)	64,000.00		
For causeway across Back Channel (west wall) (submitted)	20,547.00		
For dredging fresh-water basin and filling in (total estimate, $495,000) (submitted)	200,000.00		
For new boiler house for steam engineering (submitted)	3,795.00		
For wharf crane	3,000.00		
For weighing scales (submitted)	1,880.00		
		293,222.00	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			37,580.00

*Including Sundays.

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditures.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
NAVY-YARDS AND STATIONS—continued.			
Navy-yard, Washington, D. C.:			
For improving electric plant (submitted)	$16,000.00		
For dredging in front of sea wall (submitted)	3,861.00		
For new scale house (submitted)	1,271.82		
For storehouse for guns and mounts (submitted)	35,000.00		
		$56,132.82	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			$77,669.21
Navy-yard, Norfolk, Va.:			
For extension of quay wall north of Timber Basin (continuation of) (submitted)	10,000.00		
For completing quay wall from Timber Basin to marine railway (submitted)	10,000.00		
For shipfitters' shop, near dry docks (submitted)	40,000.00		
For dredging (submitted)	35,000.00		
For rebuilding blacksmith shop (submitted)	35,000.00		
For paving, grading, and sewers (total estimate, $20,000) (submitted)	5,000.00		
For piping and engine for fire service (submitted)	15,000.00		
For removing deteriorated parts of Dry Dock No. 2 (wooden) (submitted)	20,000.00		
For new dry dock (deep draft) (total estimated cost, $1,000,000) (submitted)	200,000.00		
		370,000.00	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			44,000.00
Naval station, Port Royal, S. C.:			
For grading and drainage (submitted)	7,579.25		
For railway track scales (submitted)	500.00		
For storage cistern (submitted)	3,757.88		
		11,837.13	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			185,182.00
Naval station, Key West, Fla.:			
For sea wall from machine-shop lot to extension of Eaton street (submitted)	2,000.00		
For dredging along front of wharf and inside the L (submitted)	3,000.00		
For new machine shop (submitted)	30,000.00		
		35,000.00	
Amount appropriated for the current fiscal year ending June 30, 1897:			
Act June 8, 1896			4,000.00
Act June 10, 1896			6,400.00
Navy-yard, Mare Island, Cal.:			
For extension of quay wall (total estimate, $50,000) (submitted)	30,000.00		
For dredging (submitted)	20,000.00		
For grading and paving about stone dry dock (submitted)	10,000.00		
For completing coppersmith shop, steam engineering (submitted)	3,000.00		
For storage shed north of building No. 55 (submitted)	3,785.00		
		66,785.00	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			97,294.57
Naval station, Puget Sound, Wash.:			
For clearing, stumping, and grading station (toward) (submitted)	10,000.00		
For wharf (submitted)	60,000.00		
For fence around station (submitted)	4,000.00		
For filling in marsh (submitted)	5,000.00		
For extension of brick discharge culvert (submitted)	5,143.62		
		84,143.62	
Amount appropriated for the current fiscal year ending June 30, 1897 (act June 10, 1896)			101,230.00
Dry dock, Puget Sound, Wash.:			
Housing torpedo vessels:			
For hauling out and housing torpedo vessels at such navy-yards or stations as may be selected (submitted)	225,000.00		
		225,000.00	
		1,373,662.57	697,355.78

REPORT

OF

THE CHIEF OF THE BUREAU OF EQUIPMENT.

NAVY DEPARTMENT, BUREAU OF EQUIPMENT,
Washington, D. C., October 1, 1896.

SIR: I have the honor to submit the report of this Bureau for the fiscal year ending June 30, 1896, with the estimates for the fiscal year ending June 30, 1898:

The report includes the business operations of the Bureau, the report of the Superintendent of the Naval Observatory, of the inspector of electric lighting, and of the superintendent of compasses.

The following were the appropriations for the Bureau and its branches under the naval bill:

Equipment of vessels	$1,278,000
Contingent equipment	12,000
Civil establishment	19,625
Increase of the Navy equipment	125,000
Naval Observatory	12,000
Naval Observatory buildings	10,000

All the above appropriations were sufficient except that for contingent equipment, and for the Naval Observatory buildings; the former will show a deficiency, owing principally to the largely increased expenditures on account of the transportation of freight on equipment articles from yard to yard and to ships on foreign stations out of the naval supply stock, and to the increased expenditure of funds on account of the greater quantity of ashes to be removed because of the increased number and size of ships in commission; the latter was increased during the last session of Congress to $12,500, within which sum a contract has been made for the buildings and work begun.

The appropriation "Increase of the Navy equipment" was not sufficient, and in the urgent deficiency bill, act February 26, 1896, $50,000 additional were appropriated and made immediately available, but this amount was deducted from the estimates of the current year.

The following was manufactured at the Boston Navy-Yard, at a cost for labor of $87,938.28, and for material $112,361.57.

In the ropewalk:	Pounds.
Manila rope	437,082
Hemp rope	41,213
Wire rope	45,193
Bolt rope	295,537
Seizing	10,855
Spun yarn and manila yarn	106,146
Marline, codline, ratline, houseline, etc	145,432

	Pounds.
In the rolling mill:	
Iron rolled	636,098
In the machine shop:	
Chain studs	18,296
Turnbuckles	1,070
Galley parts	4,447
Miscellaneous articles	2,289
In the forge, anchor, and chain shop:	
Anchors manufactured or altered	62,492
Chain cables of various sizes	356,550
Shackles, grapnels, hammock rings, and miscellaneous articles	23,579

There was expended in the sail lofts of the several navy-yards the sum of $60,741.37 for labor and $36,621.20 for material, and in the rigging lofts $25,935.20 for labor and $13,816.13 for material.

Hemp for the manufacture of cordage of all kinds, to the amount of $32,654.30, was purchased during the year as follows:

	Tons.	Cost.
American hemp	51	$11,434.00
Russian hemp	50	9,411.18
Manila hemp	70	11,809.12
Total	172	32,654.30

The following material was on hand at the Boston Navy-Yard at the close of the year for the manufacture of rope:

	Pounds.
American hemp	155,402
Manila hemp	175,308
Russian hemp	105,071
Wire	181,189
Hide (cut yarns)	2,211

The sum of $345,729.88 was expended at the several navy-yards in equipment.

There was expended abroad for equipment supplies the sum of $491,366.19. Of this amount $423,335.98 were expended for 61,741 tons of coal, an average of $6.85 per ton.

A total of 116,903 tons of coal, costing $620,131.38, was purchased during this year, as against 98,822 tons, costing $518,748.32, during fiscal year 1895; 61,741 tons were purchased abroad in 1896, as against 47,985 tons in 1895, at an average decreased cost per ton in 1896 of 15 cents.

The average cost of all coal in 1896 was $5.30+, against $5.35 in 1895.

There were purchased at home 55,162 tons of coal, costing $196,795.40, an average of $3.57; of which quantity 47,521 tons were purchased on the Atlantic Coast, at an average cost of $2.99 per ton, and 7,641 tons on the Pacific Coast, at an average cost of $7.01, a decrease in average cost on the Atlantic Coast in 1896 over that of 1895 of 23 cents, and an increase of 22 cents on the Pacific Coast.

Of a total of 92,910 tons of coal used by the new ships of the Navy, 41,924 tons, or 45 per cent, was for steaming purposes, and 50,986 tons, or 55 per cent, was for auxiliary purposes, under which latter head are included electric lighting, distilling, heating, flushing water-closets, cooking, ventilation, and steam-cutter service. This percentage is 8.4 less for steaming and 8.4 more for auxiliary purposes than in the previous year.

The following list gives the expenditures for steaming and for auxiliary purposes for each ship:

Name.	Moving ship.	Distilling.	Pumps.	Lighting.	Heating.	Galley.	Steamboats.	Other.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Adams	147	56	.....	.....	29	26	18	8
Alert	600	201	1	.....	.....	47	22	.....
Alliance	181	82	1	.....	21	58	11	.....
Amphitrite	842	271	813	264	42	42	12	140
Atlanta	691	55	158	158	.....	13	3	.....
Baltimore	2,187	1,682 tons used for auxiliary purposes. Details not complete.						
Bancroft	186	218 tons used for auxiliary purposes. Details not complete.						
Bennington	455	222	63	571	136	49	42	63
Boston	1,220	178	212	464	76	48	30	21
Castine	580	345	171	248	9	34	17	70
Charleston	1,800	335	148	491	372	98	64	169
Cincinnati	988	639	384	519	216	65	63	576
Columbia	2,904	1,071	933	1,838	560	131	55	92
Concord	823	1,035 tons used for auxiliary purposes. Details not stated.						
Cushing	84	21 tons used for auxiliary purposes. Details not stated.						
Detroit	1,009	422	250	613	69	49	15	.....
Dolphin	968	104	76	222	197	54	62	365
Essex	252	110	.....	.....	90	50	14	.....
Fern	177	.....	4	.....	69	4	.....	43
Indiana	1,094	1,718 tons used for auxiliary purposes. Details not complete.						
Katahdin	248	28	23	143	28	12	.....	62
Lancaster	511	193	32	4	47	69	31	.....
Machias	371	108	116	490	86	33	30	.....
Maine	770	173	661	650	110	82	51	61
Marblehead	1,104	159	52	667	67	47	121	389
Marion	681	166	63	.....	.....	33	19	60
Michigan	289	.....	.....	.....	90	42	14	.....
Minneapolis	5,013	569	553	1,142	137	147	50	577
Mohican	127	43	.....	.....	56	10	13	.....
Massachusetts	133	tons used for all purposes. Details not complete.						
Monocacy	360	93	2	.....	140	64	15	.....
Monadnock	245	65	86	334	17	21	22	72
Monterey	874	260	209	750	189	59	26	29
Montgomery	1,285	191	796	527	132	65	41	.....
Newark	2,579	398	758	758	30	97	71	.....
New York	3,103	729	1,093	2,035	313	96	120	157
Olympia	3,075	1,084	301	1,048	45	111	98	49
Petrel	697	475 tons used for auxiliary purposes. Details not complete.						
Philadelphia	764	2,324 tons used for auxiliary purposes. Details not complete.						
Pinta	90	24	.....	.....	212	70	.....	.....
Raleigh	2,957	262	312	716	.....	122	53	351
Ranger	237	60	.....	.....	21	33	13	22
San Francisco	1,998	505	163	619	106	213	50	4
Terror	380	tons used for all purposes. Details not complete.						
Texas	423	1,125 tons used for auxiliary purposes. Details not complete.						
Thetis	616	59	40	.....	11	43	55	.....
Yantic	95	87	1	.....	72	41	36	.....
Yorktown	510	296	203	410	106	124	20	.....

The Bureau, in endeavoring to utilize American coal as much as possible, has made a trial of placing a cargo of Pocahontas coal at Honolulu. This has been done at a rate which allows it to compete successfully with the Dominion of Canada coal, or that from Australia.

It is of first importance that we should use good coal, particularly on the more distant stations and at ports where coaling points are distant. The reasons are many and obvious, among them being the greater steaming radius, and a thus practically greater bunker capacity; a greater efficiency in motive power, less damage to boilers, and less labor on the part of firemen and coal passers.

During the year the mess outfits have been extended to the enlisted men with very satisfactory results.

Homing pigeon stations have been established at Newport, R. I., New York, Norfolk, Va., Key West, Fla., and Mare Island, Cal., and preparations made for a station at Portsmouth, N. H. The period has been too short to do much actual work, but the whole is on a very satisfactory basis for future use.

The following is the report of the Superintendent of the Naval Observatory.

UNITED STATES NAVAL OBSERVATORY,
GEORGETOWN HEIGHTS,
Washington, D. C., August 29, 1896.

SIR: I have the honor to submit the annual report of the operations of the United States Naval Observatory for the fiscal year ending June 30, 1896.

ASSISTANT TO THE SUPERINTENDENT.

In addition to the duties of this office, detailed in the Regulations for the Government of the Naval Observatory, the Assistant Superintendent is the equipment officer and general storekeeper of the station. The latter duty embraces the preparation of the transfer papers of all articles issued, making the weekly and monthly reports incident to the general storekeeper's office, and keeping all books of record. This very considerable amount of work has been done by Lieut. Commander Walton Goodwin, United States Navy, without clerical aid.

DEPARTMENT OF ASTRONOMICAL OBSERVATIONS.

Professor William Harkness, United States Navy, the Astronomical Director, reports as follows concerning the work of this department:

THE 26 INCH EQUATORIAL.

[Professor STIMSON J. BROWN, U. S. N., in charge.]

As usual this telescope has been principally employed on work which could not well be done with smaller instruments, but on account of the abnormal prevalence of cloudy weather, the number of observations obtained is somewhat below the average. They are as follows: Swift's comet, (*a*) 1895, 14; Faye's comet, 10; Polyhymnia, 5; Titan-Iapetus, 26; Dione-Tethys, 22; Dione-Enkeladus, 3; observations of double stars, 17; occultations of stars by the moon, 2.

During the early twilight hours in the month of March, search was made for the companion of Sirius on every favorable opportunity, and on one or two occasions what seemed to be faint objects were measured, but it is not certain that they represent anything really existing in the heavens. There was indeed little reason to expect that the search would be successful, because the computed distance of the companion from Sirius was then between 3.5″ and 4.2″, and in 1889 Professor Hall found that, although it remained visible in this telescope when its distance had decreased below 5.8″, it was then too difficult to measure.

During the period from January to March, many attempts were made to observe Jupiter's fifth satellite, but they all resulted in failure, although Professor Brown had found it a comparatively easy object at the old observatory in 1892. Attempts were also made at various times during the year to reobserve some of the most important of the close double stars which were measured by Professor Hall at the old observatory. The greater part of these objects require magnifying powers of from 600 to 900 diameters, but no nights were found during the winter when such high powers could be used. Generally 400 was too high for good definition, and often even 200 was impracticable. Professor Brown

thinks that in the cold weather the seeing with the 26-inch telescope was worse here than at the old observatory, and that the difference should not be ascribed wholly to the unfavorable conditions which prevailed during last year. The construction of the equatoral building is defective, in that the office rooms, which are necessarily warmed in winter, are separated from the telescope room only by an ordinary door without any intervening passageway, the heavy masonry walls give rise to much radiation, and the temperature in the basement under the elevating floor is frequently 10° higher than in the dome above. Under these circumstances the warm air in the basement finds a ready escape into the telescope room through the various necessary openings in the elevating floor, and thus renders good definition impossible. The consequent loss of work has been a source of much vexation.

Some time was spent in adjusting the spectroscope to the photographic focus of the $H\gamma$ rays from Sirius. Two successful photographs were obtained with exposures of 45 minutes, but owing to the difficulty of keeping the H rays on the slit, only about one-third of that time was effective. The image given by these rays was fairly visible, and the difficulty in maintaining the pointing arose from the fact that the right ascension slow motion screw of the telescope is at an inconvenient distance from the spectroscope, and does not give a sufficiently delicate motion for this special purpose.

The observations of miscellaneous objects have been prepared for publication, and the systematic work on the satellites of Mars and Saturn has been partially discussed. In the case of Phobos all the observations made with the Lick 36-inch telescope have been reduced and incorporated with our own. Thus far the reduction of the work on the satellites of Saturn has been confined to Titan-Iapetus, and all equations of condition for the observations of 1894–95 have been completed, but they still need checking.

Professor Brown was absent from the Observatory on a trip to Europe from July 20 to November 12, 1895, and during that period the 26-inch telescope was used by Professor Frisby for the observation of such objects as were too faint to be readily seen with the 12-inch telescope.

The dome covering this instrument is turned by means of a hand-rope whose motion was originally ten times that of the circumference of the dome. The diameter of the dome being 45 feet, in order to turn it half around the rope had to be pulled through 706 feet, and, notwithstanding the lightness of the motion, that was very tiresome. On June 22, 1896, Messrs. Warner & Swasey altered the gearing connecting the rope with the dome, so as to make the speed of the former only five times that of the latter; and, although the average pull was thereby increased to about 19 pounds, the labor of turning the dome has been rendered much less exhausting.

The following alterations in the mounting of the 26-inch telescope were also made by Messrs. Warner & Swasey toward the end of June, 1896. First, the latitude adjustment of the polar axis having been quite exhausted in the original adjustment of the instrument, a steel plate 0.125 of an inch thick was inserted under the northern adjusting wedge, so as to bring the adjusting screws back to the middle of their run; second, a pair of magnets were applied to the driving clock of the telescope for the purpose of supplying an electrical control from one of the standard sidereal clocks. It is doubtful if any advantage will result from this, but it was thought desirable to try the experiment.

THE 12-INCH EQUATORIAL.

[Professor EDGAR FRISBY, U. S. N., in charge.]

The old 9.6-inch Munich objective continued to be used in this telescope until December 19, 1895, when it was replaced by a new 12-inch objective made by Messrs. Alvan Clark & Sons, of Cambridgeport, Mass. The latter is as nearly as possible of the Fraunhofer-Herschel form, its curves having been specially computed by the Astronomical Director from the refractive indexes of the hard crown and dense flint glasses out of which its lenses were made. Of course the use of a new objective necessitated a new determination of the intervals of the micrometer wires, and of the value of a revolution of the micrometer screw, and five nights were spent in that work.

The observations made during the year were as follows: Parthenope, 1; Polyhymnia, 2; Pales, 1; Clio, 1; Undina, 1; Hermione, 1; Perine's comet, 5; Comet (*a*), 1896, 10; Comet (*b*), 1896, 8; observations of four faint comparison stars, 8; occultations of stars by the moon, 40; eclipses of Jupiter's satellites, 11.

On account of the unusual amount of cloudiness, much time was fruitlessly spent in looking for faint objects during unfavorable weather.

All observations are reduced up to date, and those requiring prompt publication have been printed in the Astronomical Journal. In addition to this, Professor Frisby has found time to compute the reduction from apparent to mean place for a considerable number of zone stars, and an ephemeris of the risings and settings of the moon at Washington for the entire year.

On two evenings of each week, weather permitting, the 12-inch telescope has been used for the exhibition of celestial objects to visitors. During the year 2,759 permits were issued to such visitors by the Observatory, and a large additional number were issued by the Bureau of Equipment.

THE 9.14-INCH TRANSIT CIRCLE.

[Assistant Astronomer AARON N. SKINNER in charge.]

In the work of this instrument Assistant Astronomer Skinner has been aided during the year by Assistant Astronomer H. M. Paul, Computers Frank B. Littell, Theo I. King, and E. A. Boeger, and since October 8, 1895, he has also had the services of Mr. John N. James for a large part of the time, that gentleman having acted as a computer whenever he was not occupied by his duties as electrician.

The observations made during the year were as follows: Zone stars situated between 13° 50′ and 18° 10′ of south declination, 4,897; Zero stars, 390; American Ephemeris stars, 778; miscellaneous stars, 44; Sun, 63; Moon, 37; Mercury, 38; Venus, 56; Jupiter, 9; Saturn, 1; Uranus, 1; Neptune, 11. Total, 6,325.

The original observing list for the German Astronomical Society's Zone, lying between 13° 50′ and 18° 10′ of south declination, contained 8,689 stars, and the plan of operations undertaken by this Observatory required that each of these stars should be observed twice with the meridian circle, viz, once with clamp east and once with clamp west. Accordingly, the instrument was used with clamp east during the calendar year 1894, and with clamp west in 1895, and the work was substantially completed on January 4, 1896. Probably two or three hundred additional observations will yet be required to supply accidental omissions and clear up discordances.

In the progress of the zone observations Mr. Skinner has discovered two more new variable stars besides the two mentioned in my last report. Mr. Paul has regularly observed all four of these variables during the year, as well as one or two others suspected by Mr. Skinner, but not yet shown to be variable. The numbers and names assigned by Dr. Chandler in his catalogue to the four new variables, their Bonn Durchmusterung numbers, and the number of nights each has been observed during the year are as follows:

3,425	X Hydræ	=BD—14°2893	16 nights.
5,405	RT Libræ	=BD—18°3975	24 nights.
7,590	Z Capricorni	=BD—16°5811	23 nights.
8,622	W Ceti	=BD—15°6531	29 nights.

For the two variables first discovered, X Hydræ and W Ceti, Mr. Paul has determined and published approximate elements of variation; but for the other two, further observations are necessary to decide between several possible periods.

The small number of observations of the Sun, Moon, and planets is due partly to the circumstance that the instrument was undergoing repairs for almost five months, and partly to the unusual prevalence of clouds, which compelled us to use most of the clear nights on the zones in order to prevent them from extending over another year.

The state of the reductions is as follows: For the zone stars, the tables for the reduction from apparent to mean place are nearly completed, and about 5 per cent of the reductions in right ascension have been applied; the corrections for level, collimation, and azimuth have been applied throughout; about 11 per cent of the clock corrections have been applied, and about 33 per cent of the refractions. The Sun, Moon, and planet observations are all copied on the reduction sheets.

In compliance with special requests, the moon observations from March 1 to October 1, 1895, have been reduced for the Zi-ka-wei Observatory in China; 20 observations of 10 zone stars have been reduced for Professor Lorenzoni, of Padua, Italy; and 2 observations of 1 zone star have been reduced for Professor Schur, of Göttingen, Germany.

During the year the transit circle has undergone three very important alterations. (1) A new cell has been made for the object glass, and a new mounting has been provided for carrying the sliding tube at the eye end of the telescope. (2) The old collimator piers have been replaced by larger ones, and more substantial mountings have been provided for carrying the collimator telescopes and the long focus lens used in viewing the meridian mark. (3) Suitable shades have been provided for protecting the transit circle from the direct rays of the sun while that body is being observed.

As originally constructed by Pistor & Martins, the telescope of the transit circle had a clear aperture of 8.52 inches and a focal distance of 145 inches. When the instrument was removed from the old to the new Observatory it was thought desirable to shorten the telescope, and accordingly a new objective of 9.14 inches clear aperture and 108 inches focal distance was provided. This necessitated a complete reconstruction of the objective and eye ends of the telescope tube, and the work was intrusted to a Washington firm of high reputation, but when tested by actual use it proved to be so badly done that the stability of the line of collimation was open to doubt. The zone observations could not well be interrupted, but as soon as they were finished it was decided to attempt to remedy this very serious defect, and in a consultation between Mr. Swasey and the Astronomical Director, the changes to be made were

agreed upon, and Mr. Swasey declared that the time necessary to effect them would not exceed four working days in the shops of his firm. On January 28 the instrument was dismounted in the confident expectation that it would not be out of use more than two weeks, but when the parts to be altered were taken to pieces and examined it became evident that the proposed alterations were impracticable, and that the only satisfactory course would be to make entirely new mountings for both the objective and eye ends of the telescope. Detailed drawings and specifications for the new parts were prepared by the Astronomical Director, and the work was put into the hands of Messrs. Warner & Swasey as expeditiously as possible, but notwithstanding the most strenuous efforts, the end of May had nearly arrived before the instrument was again put together.

The piers and mountings of the transit-circle collimators and long-focus lens for the meridian mark were furnished by the firm who altered the telescope, and they also proved so unstable that contracts for replacing them with larger piers and better mountings were given to Messrs. Warner & Swasey in 1894 and 1895. Various delays occurred, in consequence of which the collimator telescopes were in the shops of the contractors during the month of May, 1896, and the new piers were not in place until the middle of June. While the new mountings were being fixed on the piers, the shades for protecting the transit circle from the sun's rays were put in place, and the whole work was completed on June 27, 1896. Observing was resumed on June 28, the anticipated interruption of two weeks having extended to five months.

THE PRIME VERTICAL TRANSIT INSTRUMENT.

[Assistant Astronomer GEORGE A. HILL in charge.]

This instrument is used exclusively for investigating variations of latitude and determining the constants of aberration and nutation. As the aperture of the telescope is sufficient to show α Lyræ in the daytime, the plan is to observe that star for variation of latitude at every possible culmination throughout the year, and to observe μ Andromedæ, α Canum Venaticorum, θ Aurigæ and γ Bootis near the times of their maximum aberration in order to disentangle the latter constant from the latitude variation. Furthermore, α Lyræ is also observed at every possible culmination with the meridian instrument Stackpole & Bro. No. 1502, the method of procedure being to observe the star on the eastern vertical with the prime vertical transit, then on the meridian with Stackpole 1502 used as a zenith telescope, and finally on the western vertical with the prime vertical transit. In that way the declination of the star is determined at every observable culmination both with the prime vertical transit instrument and with the zenith telescope, and thus a very complete check is obtained on the work of the two instruments.

The number of observations obtained during the year was as follows: With the prime vertical transit instrument, μ Andromedæ, 15; θ Aurigæ, 45; α Canum Venaticorum, 34; α Lyræ, 130. With the zenith telescope, α Lyræ, 150. Total, 374 observations, in getting which the observer was obliged to spend the entire night at the Observatory 151 times.

All observations made with the prime vertical transit instrument and zenith telescope prior to April 21, 1896, have been reduced, and all made with the former instrument prior to January 1, 1896, have been *copied upon* sheets for the printer. During intervals not occupied by

his regular duties as photographer, Mr. Charles T. Fellows has given Mr. Hill much valuable clerical assistance.

In December and January a redetermination of the constant of the micrometer screw of the zenith telescope was made by observing the stars 17, 19, 23, η, 27, and 28 Tauri on 18 nights; the result being, one revolution of the screw $= 68.455'' \pm 0.0028''$.

The Washington firm who altered the 9.14-inch transit circle also altered the prime vertical transit instrument at the time of its removal from the old to the new Observatory, and in many respects their work upon the latter instrument has ultimately proved almost as unsatisfactory as that upon the former. One of the most vexatious defects was the extreme difficulty of reading the bubble of the striding level through the small Galilean telescope provided for that purpose on top of the northern pier. This has been remedied by substituting an inverting telescope, with a Huyghenian eyepiece magnifynig six diameters, in place of the Galilean one; and by removing the protecting glass tube which surrounded the bubble tube, and substituting in its place a glass box with perpendicular sides, containing a photographed scale standing over the bubble tube perpendicularly to the line of sight and showing bright lines on a dark ground. These alterations were made in August, 1895, by Mr. M. Kahler, of this city.

THE TRANSIT-CIRCLE STAR CATALOGUE.

[Professor JOHN R. EASTMAN, U. S. N., in charge.]

This catalogue will contain the mean places for 1875.0 of about 6,000 stars, based upon all the stellar observations made with the 8.5-inch Pistor & Martins transit circle at the old Naval Observatory. In its preparation Professor Eastman has been assisted during the year by Computer William M. Brown, and by Mr. F. H. Parsons, temporarily employed for this purpose. The time of these gentlemen has been occupied in taking the means of the annual results for the places of the miscellaneous stars, computing the precessions of the Ephemeris stars, and computing the secular variations of the precessions for both the Ephemeris and miscellaneous stars. The annual results for the positions of the Ephemeris stars, together with the catalogue based upon them, are ready for the printer.

MISCELLANEOUS MATTERS.

In October, 1895, the Observatory received a new comet seeker, made by Mr. John A. Brashear, of Allegheny, Pa. Its telescope has a clear aperture of 5.0 inches with a focal distance of 40 inches, and is of the bent form, with alt-azimuth mounting. The place for the observer's eye is at the extremity of the horizontal axis, and there are 5 Huyghenian eyepieces whose magnifying powers were intended to be respectively 20, 28, 40, 57, and 80 diameters.

The observing houses for the east and west transit circles, and for the prime vertical transit instrument, are all lined with corrugated sheet zinc 0.031 of an inch thick. The sheets composing the ceilings were bent to a large radius and set between the iron rafters in such a way as to form flat arches which were perfectly secure so long as the metal retained its form; but, unfortunately, zinc is very easily affected by heat, and under the action of our high summer temperatures the sheets gradually buckled, and finally began to give way. To remedy this the ceilings of the three observing houses in question were taken down

during March and April of the present year, and the zinc sheets were first straightened, and then replaced in a more substantial manner.

Since leaving the old Observatory much inconvenience has been experienced for want of a support suitable for carrying level triers, and other small apparatus, requiring great stability. Toward the end of last June this need was supplied by the erection in the clock house of a slate table 18 inches wide and 56.5 inches long, supported upon two small brick piers.

It is a matter of regret that very little progress has been made with our printing during the present year. Early in the fall of 1895 the Observatory volume for 1890 was completely set up and stereotyped, and in response to all subsequent inquiries we have been told that the work was being prosecuted as rapidly as other demands upon the Government Printing Office would admit. I understand that the presswork is finished, but the volume is not yet bound.

Very respectfully,

WM. HARKNESS,
Professor of Mathematics United States Navy,
Astronomical Director.

Referring to Professor Harkness's remarks upon the defective construction of the equatorial building, from which results imperfect seeing with the 26-inch equatorial during very cold weather, the defects are remediable, in part at least, and steps are now being taken to apply such remedies as are practicable.

These remedies will consist in walling up the opening between the basement of the dome and of the offices, and of fitting double doors to all lines of communication on the main floor between the dome and the office building.

DEPARTMENT OF THE NAUTICAL ALMANAC.

Professor Simon Newcomb, United States Navy, the Director of the Nautical Almanac, having been detailed by the Navy Department as a member of the Paris Conference on Astronomical Constants and of the International Conference on Scientific Literature, has been absent on these special duties since April 15, 1896.

During his absence Professor William W. Hendrickson, United States Navy, has performed the duties of his office. Professor Hendrickson submits the following report of the work of the department of the Nautical Almanac:

PRINTING.

The American Nautical Almanac for 1899 has been published, and the American Ephemeris for 1899 is in press. The Pacific Coaster's Nautical Almanac for 1897 is also in press. The printing of the American Nautical Almanac for 1900 has been commenced.

DISTRIBUTION.

During the fiscal year ending June 30, 1896, the sale and distribution of publications has been as follows:

Title.	Sold.	Distributed.	Public service.	Total.
American Ephemeris	524	651	487	1,662
American Nautical Almanac	2,149	.....	273	2,422
Pacific Coaster's Almanac	1,242	.....	23	1,265
Astronomical Papers	2	881	5	888

The proceeds of sales, amounting to $1,020.24, have, in compliance with law, been deposited in the Treasury to the account of the appropriation for public printing and binding.

NEW TABLES OF THE PLANETS.

Since the last annual report the following have been published: Volume V, Part V, The Mass of Jupiter and the Orbit of Polyhymnia; Volume VI, Part I, Tables of the Sun; Volume VI, Part II, Tables of Mercury; Volume VI, Part III, Tables of Venus; Volume VII, Part II, Tables of Saturn.

The revision of the theory necessary to the completion of the tables of Mars is still in progress. Work has been commenced on the tables of Uranus and Neptune.

EPHEMERIS OF FIXED STARS.

Since January all the available force of the office has been employed upon the new catalogue of standard stars and in preparing the tables necessary for the ephemeris of apparent places of these stars for use in the American Ephemeris and Nautical Almanac for 1900 and succeeding volumes.

The office has sustained a serious loss in the death of Assistant Cleveland Keith, whose talent for astronomical work was far above the official position he held.

Very respectfully,

W. W. HENDRICKSON,
Professor U. S. Navy, in charge of Office.

DEPARTMENT OF NAUTICAL INSTRUMENTS.

Lieutenant Frank W. Kellogg, United States Navy, was the head of this department.

The classes of nautical instruments issued from the Observatory are: Sextants, octants, spy glasses, binocular glasses, protractors, stadimeters, drawing instruments, reading glasses, theodolites, measuring tapes, plane tables, physchrometers, thermometers, barometers, surveyors' compasses and chains, deck and boat clocks, clinometers, photographic outfits, parallel rulers, and other instruments issued to ships for navigating and surveying purposes.

Sextants and octants are inspected for accuracy of dimensions, form and fit of the pivot, graduations of arc and vernier, eccentricity of limb, optical performance of telescopes, parallelism of faces of mirrors and shade glasses, weight, quality of workmanship, and conformity in other respects to the specifications.

Spyglasses and binoculars are inspected for power, field, clear aperture, focal distance, and mechanical construction, as set forth in the specifications for the several grades of glasses.

Other instruments are inspected for conformity to detailed specifications that are attached to the requisitions for them.

The work of this department is laborious, requiring patience and painstaking.

The rigid inspection of nautical instruments under carefully prepared specifications, as now conducted, has been productive of the good results that were anticipated, and it may be confidently asserted that our ships are being supplied with instruments well adapted to their uses and at

reasonable cost, the latter being largely due to the wide range of competition that has been invited.

The value of this department of the Observatory to the naval service can not be overestimated.

In addition to the above routine work, a number of devices submitted by inventors and others have been examined and reported upon with such recommendations as were deemed proper in each case.

DEPARTMENT OF CHRONOMETERS AND TIME SERVICE.

Lieutenant L. C. Heilner, United States Navy, was the head of this department until August 12, 1895, when he was succeeded by Lieutenant William V. Bronaugh, United States Navy. Lieutenant Bronaugh reports as follows:

The following is the disposition of the chronometers belonging to the Navy:

Kind.	In service afloat.	In service on shore.	In store at Mare Island.	At Observatory for issue.	Undergoing repairs.	Awaiting repairs.	For survey.
Standards	127	13	34	25	13	.....	.....
Hacks	41	23	11	3	3	4	1
M. T. B. C	.....	4	1	2	.....	.....	.....
Sidereal, B. C	1	4	2	1	3	.....	.....
Sidereal	.....	.....	1	1	.....	.....	.....
Pocket	.....	.....	.....	5	.....	.....	.....

In addition to the above there are in store 14 comparing watches for issue, 1 for repairs, and 1 for survey; 14 silver-case stop watches and 2 gold-case stop watches for issue; 10 maximum and minimum thermometers for issue and 4 in use at Observatory.

One standard chronometor has been condemned and transferred to the hack list, leaving a total of 212 standards. Of these, 95 are over thirty-five years old, and the probabilities are that they will soon cease to be reliable as timekeepers.

During the year 22 standard chronometors, 10 hacks, 7 stop watches, 8 comparing watches, and 7 maximum and minimum thermometers have been issued to naval vessels, and 5 stop watches, 6 comparing watches, and 6 maximum and minimum thermometers have been sent to the Mare Island Yard for issue. The Observatory has received 12 standards, 5 hacks, 1 stop watch, and 2 comparing watches from naval vessels; 4 hacks from Mare Island Yard; 2 comparing watches and 2 maximum and minimum thermometers from other Navy Yards. One standard chronometer loaned to Lieutenant Beehler has been returned, and 1 mean-time break-circuit chronometer and 1 maximum and minimum thermometer, issued for use in connection with Naval Exhibit at the Atlanta (Ga.) Exposition, were returned.

Eight maximum and minimum thermometers condemned by survey as worthless have been expended; 2 comparing watches and 1 stop watch condemned by survey were sent to the New York Navy-Yard for sale.

The annual trial of repaired chronometers commenced December 14, 1895, and was finished May 24, 1896. Twenty-one standard chronometers and 1 mean-time break-circuit chronometer were subjected to trial. During the same period 21 chronometers submitted for purchase were subjected to trial, and 2 chronometric thermometers entered at the same time are still undergoing trial. The results in detail of the trials are:

Record of trial of repaired chronometers (December, 1895, to May, 1896).

[In temperature room from December 14, 1895, to February 28, 1896; after that in chronometer room.]

Relative number.	Repaired by—	Chronometer number.	Maker.	Dec. 14 to Dec. 21.	Dec. 22 to Dec. 29.	Jan. 4 to Jan. 11.	Jan. 13 to Jan. 18.	Jan. 20 to Jan. 27.	Jan. 28 to Feb. 4.
	Time								
	Temperature, Fahrenheit			46.22°	54.95°	70.00°	85.11°	89.99°	84.94°
	Relative humidity, per cent			68.6	68.1	69.6	68.8	69.5	68.8
1	Negus	1783	T. S. & J. D. Negus	+1.263	+1.034	+1.104	+0.912	+1.173	+0.966
2	do	493	Wm. Bond & Son	+1.441	+0.891	+0.176	+0.412	+0.423	+0.287
3	Bliss	2843	John Bliss & Co	+0.549	+0.499	−0.146	+0.062	−0.184	−0.284
4	do	218	Wm. Bond & Son	+0.156	−1.037	−1.753	−1.138	−0.577	−1.141
5	Negus	292	do	−0.059	−0.894	−1.503	−1.138	−0.791	−1.177
6	do	1596 M. T. B. C.	T. S. & J. D. Negus	+2.441	+1.249	+0.390	+1.212	+1.709	+1.251
7	do	1739	do	+3.013	+1.249	+0.069	+0.212	+0.601	+0.251
8	do	1189	do	+2.370	+0.927	+0.211	+0.862	+1.494	+1.359
9	do	1459	do	−1.094	−2.180	−2.396	−1.338	−0.506	−1.070
10	do	514	Wm. Bond & Son	+1.656	+0.749	−0.181	+0.212	+0.316	+0.216
11	do	1291	T. S. & J. D. Negus	+0.334	−0.894	−1.503	−0.188	+0.709	+0.073
12	do	1113	do	+1.441	+0.534	+0.319	+0.862	+0.959	+0.323
13	do	1749	do	+2.334	+0.999	−0.003	+0.762	+1.209	+0.859
14	do	1773	do	+0.763	+0.356	+0.033	+0.012	+0.530	+0.394
15	do	1074	do	+2.941	+1.141	+0.390	+1.862	+2.280	+1.323
16	do	1300	do	+3.441	+2.249	+0.997	+1.612	+1.959	+1.251
17	Bliss	2394	M. F. Dent	+0.227	+1.391	+1.104	−0.088	−0.756	−0.641
18	do	2831	Chas. Frodsham	+0.299	−0.644	−1.003	+0.162	+0.851	+0.251
19	Negus	1265	T. S. & J. D. Negus	+1.513	+0.391	+0.104	+1.112	+1.959	+1.501
20	do	1059	do	+1.156	+0.213	+0.569	+1.712	+2.423	+2.251
21	do	1464	do	+2.656	+1.356	+0.390	+1.162	+2.280	+2.037
22	do	772	do	+2.013	+1.177	+2.033	+2.862	+2.887	+2.466

Relative number.	Repaired by—	Chronometer number.	Maker.	Feb. 6 to Feb. 13.	Feb. 15 to Feb. 20.	Feb. 21 to Feb. 28.	Mar. 1 to Mar. 8.	Mar. 8 to Mar. 15.	Mar. 15 to Mar. 22.
	Time								
	Temperature, Fahrenheit			70.06°	54.75°	45.48°	61.24°	63.68°	65.87°
	Relative humidity, per cent			67.0	68.6	69.5	57.0	57.[illegible]	62.6
1	Negus	1783	T. S. & J. D. Negus	+1.231	+1.532	+1.654	+1.426	+1.266	+1.191
2	do	493	Wm. Bond & Son	−0.019	+0.482	+1.369	+0.640	+0.444	+0.441
3	Bliss	2843	John Bliss & Co	−0.054	+0.382	+0.226	+0.497	+0.694	+0.834
4	do	218	Wm. Bond & Son	−1.840	−0.918	+0.047	−0.896	−1.163	−1.094
5	Negus	292	do	−1.590	−0.768	+0.297	−0.324	−0.770	−0.880
6	do	1596 M. T. B. C.	T. S. & J. D. Negus	+0.874	+1.632	+2.869	+1.319	+1.016	+1.049
7	do	1739	do	+0.089	+1.482	+3.226	+1.069	+0.623	+0.549
8	do	1189	do	+0.803	+1.582	+2.547	+1.319	+1.051	+1.084
9	do	1459	do	−1.697	−1.268	−0.489	−1.574	−1.806	−1.737
10	do	514	Wm. Bond & Son	−0.269	+0.782	+1.940	+0.569	+0.051	−0.059
11	do	1291	T. S. & J. D. Negus	−0.983	−0.518	+0.297	−0.824	−1.091	−1.023
12	do	1113	do	−0.411	+0.882	+1.726	+0.497	+0.087	+0.191
13	do	1749	do	+0.803	+1.682	+3.011	+0.926	+0.623	+0.549
14	do	1773	do	+0.589	+1.432	+1.226	+0.926	+0.551	+0.549
15	do	1074	do	+0.696	+1.282	+2.547	+1.354	+1.266	+1.120
16	do	1300	do	+0.803	+1.932	+3.119	+0.997	+0.551	+0.584
17	Bliss	2394	M. F. Dent	+0.446	+0.982	+0.726	+1.211	+1.194	+0.977
18	do	2831	Chas. Frodsham	−1.161	−0.468	+0.583	−0.646	−1.306	−1.130
19	Negus	1265	T. S. & J. D. Negus	+0.803	+1.432	+2.726	+0.854	+0.587	+0.620
20	do	1059	do	+0.731	+1.132	+2.154	+0.140	−0.234	+0.049
21	do	1464	do	+1.589	+2.282	+3.119	+1.783	+1.551	+1.549
22	do	772	do	+2.374	+3.482	+4.654	+4.104	+2.944	+3.084

Record of trial of repaired chronometers (December, 1895, to May, 1896)—Continued.

[In temperature room from December 14, 1895, to February 28, 1896; after that in chronometer room.]

Relative number.	Repaired by—	Chronometer number.	Maker.	Mar. 22 to Mar. 29.	Mar. 29 to Apr. 5.	Apr. 5 to Apr. 12.	Apr. 12 to Apr. 19.	Apr. 19 to Apr. 26.	Apr. 26 to May 3.	May 3 to May 10.
Time										
Temperature, Fahrenheit				66.27°	70.42°	67.09°	72.70°	73.91°	67.97°	68.80°
Relative humidity, per cent				56.7	60.8	60.9	62.0	61.4	63.6	66.0
1	Negus	1783	T. S. & J. D. Negus	+1.133	+1.021	+1.246	+0.960	+1.044	+1.296	+1.169
2	...do..	493	Wm. Bond & Son.	+0.347	+0.129	+0.031	+0.031	+0.116	—0.026	—0.153
3	Bliss..	2843	John Bliss & Co..	+0.347	+0.343	+0.674	+0.353	+0.044	—0.133	—0.061
4	...do..	218	Wm. Bond & Son.	—1.367	—1.407	—1.540	—1.540	—1.456	—1.490	—1.581
5	Negus	292	.....do	—1.117	—1.764	—1.326	—1.754	—1.634	—1.561	—1.903
6	...do..	1596 (M. T. B. C.)	T. S. & J. D. Negus	+0.919	+0.771	+0.924	+0.817	+0.866	+0.796	+0.776
7	...do..	1739	.....do	+0.490	+0.093	+0.389	—0.040	+0.044	+0.153	—0.046
8	...do..	1189	.....do	+1.169	+0.843	+0.960	+0.781	+0.973	+0.653	+0.883
9	...do..	1459	.....do	—1.760	—1.907	—1.790	—1.969	—1.813	—1.811	—1.796
10	...do..	514	Wm. Bond & Son.	—0.153	—0.693	—0.504	—1.040	—1.027	—1.061	—1.224
11	...do..	1201	T. S. & J. D. Negus	—0.831	—0.979	—0.969	—1.040	—0.884	—1.204	—1.189
12	...do..	1113	.....do	+0.240	+0.057	+0.174	—0.219	—0.027	—0.276	—0.439
13	...do..	1749	.....do	+0.347	+0.414	+0.496	+0.210	+0.116	+0.189	+0.311
14	...do..	1773	.....do	+0.490	+0.093	+0.281	—0.004	+0.044	+0.153	—0.046
15	...do..	1074	.....do	+1.061	+1.057	+0.924	+1.067	+1.509	+0.939	+0.749
16	...do..	1300	.....do	+0.490	+0.450	+0.710	+0.210	+0.437	+0.546	+0.528
17	Bliss..	2394	M. F. Dent	+1.026	+1.379	+1.210	+0.817	+0.687	+0.796	+0.668
18	...do..	2831	Chas. Frodsham	—1.224	—1.764	—1.611	—1.754	—1.491	—1.704	—1.474
19	Negus	1265	T. S. & J. D. Negus	+0.507	+0.521	+0.531	+0.567	+0.580	+0.510	+0.454
20	...do..	1059	.....do	—0.010	—0.086	—0.147	+0.103	+0.259	+0.260	+0.204
21	...do..	1464	.....do	+1.454	+1.307	+1.389	+1.317	+1.616	+1.689	+1.536
22	...do..	772	.....do	+2.740	+2.379	+2.210	+2.174	+1.616	+1.439	+1.490

Relative number.	Repaired by—	Chronometer number.	Maker.	May 10 to May 17.	May 17 to May 24.	Temperature of compensation.	Temperature, constant.	First trial number.	Final trial number.
Time									
Temperature, Fahrenheit				74.91°	74.17°				
Relative humidity, per cent				65.1	66.3				
						°			
1	Negus..	1783	T. S. & J. D. Negus..	+0.754	+0.898	47.576	—0.00026	5.7995	7.2636
2	...do....	493	Wm. Bond & Son....	—0.174	—0.007	72.839	+0.00193	7.5758	8.4500
3	Bliss....	2843	John Bliss & Co.....	—0.103	+0.029	77.847	116	9.9247	13.4067
4	...do....	218	Wm. Bond & Son....	—1.603	—1.579	70.769	324	12.4234	13.4395
5	Negus..	292	.....do	—1.996	—1.861	72.177	242	8.1488	14.6055
6	...do....	1596 (M. T. B. C.)	T. S. & J. D. Negus..	+0.790	+0.850	71.060	309	14.2587	14.6468
7	...do....	1739	.....do	—0.246	—0.186	75.917	314	17.1545	18.4000
8	...do....	1189	.....do	+0.719	+0.743	70.744	297	17.5937	18.8169
9	...do....	1459	.....do	—1.853	—1.757	66.584	257	19.3619	20.5218
10	...do....	514	Wm. Bond & Son....	—1.460	—1.436	72.859	313	14.4158	20.5811
11	...do....	1291	T. S. & J. D. Negus..	—1.067	—1.079	67.107	379	19.8702	20.5995
12	...do....	1113	.....do	—0.317	—0.650	70.563	306	17.9463	20.7052
13	...do....	1749	.....do	+0.076	+0.207	72.905	296	20.4562	21.1966
14	...do....	1773	.....do	—0.317	—0.079	81.012	103	19.7575	21.8774
15	...do....	1074	.....do	+0.754	+0.850	68.270	378	19.3273	22.2389
16	...do....	1300	.....do	+0.254	+0.279	72.832	378	21.7328	23.0052
17	Bliss....	2394	M. F. Dent.....	+0.647	+0.600	54.058	—0.00162	20.8816	24.4186
18	...do....	2831	Chas. Frodsham.....	—1.689	—1.436	68.776	+0.00399	19.1207	24.4790
19	Negus..	1265	T. S. & J. D. Negus..	+0.504	+0.493	67.671	288	25.4090	25.9958
20	...do....	1059	.....do	+0.361	+0.779	62.093	299	25.4617	27.9886
21	...do....	1464	.....do	+1.433	+1.421	71.089	316	34.1516	34.9907
22	...do....	772	.....do	+1.397	+1.421	65.654	129	62.7465	88.4717

NOTE.—The sign + signifies a loosing rate. The sign — signifies a gaining rate.

Record of competitive trial of chronometers (December, 1895, to May, 1896).

[In temperature room from December 14, 1895, to February 28, 1896; after that in chronometer room.]

Relative number.	Chronometer number.	Maker.	Dec. 14 to Dec. 21.	Dec. 22 to Dec. 29.	Jan. 4 to Jan. 11.	Jan. 13 to Jan. 18.	Jan. 20 to Jan. 27.	Jan. 28 to Feb. 4.
	Time							
	Temperature, Fahrenheit		46.22°	54.95°	70.00°	85.11°	89.99°	84.94°
	Relative humidity, per cent		68.6	68.1	69.6	68.8	69.5	68.8
1	1780	T. S. & J. D. Negus *b*	+0.656	+0.356	+0.390	+0.412	+0.709	+0.537
2	1850	do *a*	+2.406	+1.177	+0.819	+1.712	+2.137	+1.466
3	1835	do *a*	−0.094	−1.350	−1.824	−0.888	−0.149	−0.820
4	1843	do *a*	+1.406	+0.391	−0.074	+0.512	+1.066	+0.430
5	1737	do *a*	−0.416	−1.350	−1.003	−0.088	+0.423	−0.213
6	1834	do *a*	+1.406	+0.570	+0.604	+1.612	+2.173	+1.716
7	1802	do *a*	+0.977	−0.073	−0.824	+0.062	+0.351	−0.284
8	1813	do *a*	+2.441	+1.820	+1.569	+2.762	+3.994	+3.394
9	1809	do *b*	−1.416	−2.180	−1.431	−1.988	−1.791	−1.856
10	1832	do *a*	+1.906	+0.391	−0.860	−0.438	+0.066	−0.356
11	1839	do *b*	+0.513	−0.144	+0.140	+0.062	+0.494	−0.034
12	1780	do *b*	+0.441	+0.600	−0.110	+0.012	+0.316	+0.073
13	1849	do *a*	+2.691	+1.356	+0.569	+0.912	+0.994	+0.109
14	1890	do *a*	+2.763	+1.606	+1.104	+2.112	+3.101	+2.609
15	1025	H. H. Heinrich *c*	+0.691	−1.287	−1.753	−0.538	+0.209	−0.284
16	1833	T. S. & J. D. Negus *a*	+1.084	−0.430	−1.431	+0.412	+0.923	+0.430
17	994	H. H. Heinrich *a*	+0.684	−0.894	−2.074	−1.788	−1.363	−2.240
18	1022	do *a*	+0.263	−0.037	+0.319	+3.412	+4.351	+3.930
19	990	do *a*	+0.799	+1.070	−0.003	−0.188	+0.423	−0.499
20	1023	do *a*	+1.906	+0.606	−0.789	−0.388	−0.327	−0.856
21	1021	do *a*	+0.191	−0.251	−1.824	−1.338	−1.720	−2.820

Relative number.	Chronometer number.	Maker.	Feb. 6 to Feb. 13.	Feb. 15 to Feb. 20.	Feb. 21 to Feb. 28.	Mar. 1 to Mar. 8.	Mar. 8 to Mar. 15.	Mar. 15 to Mar. 22.
	Time							
	Temperature, Fahrenheit		70.06°	54.75°	45.48°	61.24°	63.68°	65.87°
	Relative humidity, per cent		67.0	68.6	69.5	57.0	57.5	62.6
1	1780	T. S. & J. D. Negus *b*	+0.231	+0.882	+0.797	+0.247	−0.020	−0.059
2	1850	do *a*	+0.606	+1.382	+2.440	+1.069	+0.766	+0.727
3	1835	do *a*	−1.661	−0.968	+0.011	−1.503	−1.806	−1.844
4	1843	do *a*	−0.876	+0.482	+1.404	+0.140	−0.377	−0.487
5	1737	do *a*	−1.019	−0.368	+0.119	−0.967	−1.163	−1.094
6	1834	do *a*	+0.803	+0.882	+1.190	−0.396	−0.663	−0.559
7	1802	do *a*	−1.090	−0.068	+1.476	−0.074	−0.306	−0.130
8	1813	do *a*	+2.017	+1.882	+2.190	+1.533	+1.230	+1.370
9	1809	do *b*	−1.447	−1.418	−1.381	−1.717	−1.663	−1.737
10	1832	do *a*	−0.626	+0.582	+2.119	−0.110	−0.806	−0.880
11	1839	do *b*	−0.054	−0.518	−1.167	−1.110	−1.234	−1.523
12	1789	do *b*	+0.089	+0.882	+0.297	+0.426	+0.123	+0.084
13	1849	do *a*	−0.209	+0.832	+2.261	+0.426	+0.230	+0.120
14	1890	do *a*	+1.946	+2.582	+3.297	+1.533	+1.051	+1.084
15	1025	H. H. Heinrich *c*	−1.054	−0.468	+0.547	+0.247	+0.206	+0.227
16	1833	T. S. & J. D. Negus *a*	−0.269	+0.482	+1.261	−0.146	−0.520	−0.559
17	994	H. H. Heinrich *a*	−3.090	−2.568	−1.524	−2.860	−2.940	−3.094
18	1022	do *a*	+2.196	+0.682	+0.226	+1.569	+1.694	+2.120
19	990	do *a*	−1.054	−0.268	−0.703	−0.253	−0.663	−0.559
20	1023	do *a*	−2.161	−0.118	+0.297	−1.146	−1.591	−1.559
21	1021	do *a*	−3.733	−3.418	−2.096	−2.646	−2.877	−2.594

a Ordinary compensation balance.
b Ordinary compensation balance with Negus correction.
c Heinrich's patent auxiliary balance.

Record of competitive trial of chronometers (December, 1895, to May, 1896)—Continued.

[In temperature room from December 14, 1895, to February 28, 1896; after that in chronometer room.]

Relative number.	Chronometer number.	Maker.	Mar. 22 to Mar. 29.	Mar. 29 to Apr. 5.	Apr. 5 to Apr. 12.	Apr. 12 to Apr. 19.	Apr. 19 to Apr. 26.	Apr. 26 to May 3.
	Time							
	Temperature, Fahrenheit		66.27°	70.42°	67.09°	72.70°	73.91°	67.97°
	Relative humidity, per cent		56.7	60.8	60.9	62.0	61.4	63.6
1	1780	T. S. & J. D. Negus *b*	—0.117	+0.129	+0.067	+0.103	+0.473	+0.439
2	1850	do *a*	+0.597	+0.414	+0.567	+0.317	+0.259	+0.224
3	1835	do *a*	—1.867	—2.050	—2.004	—2.254	—2.027	—2.061
4	1843	do *a*	—0.474	—0.871	—0.861	—1.147	—0.991	—1.133
5	1737	do *a*	—1.224	—1.336	—1.326	—1.183	—1.170	—1.347
6	1834	do *a*	—0.689	—0.729	—0.647	—0.683	—0.384	—1.061
7	1802	do *a*	—0.331	—0.479	—0.397	—0.540	—0.599	—0.669
8	1813	do *a*	+1.347	+1.343	+1.246	+1.281	+1.616	+1.153
9	1809	do *b*	—1.867	—1.943	—1.826	—2.076	—2.099	—1.847
10	1832	do *a*	—1.010	—1.300	—1.004	—1.469	—1.313	—1.133
11	1839	do *b*	—1.867	—2.229	—2.290	—2.469	—2.384	—2.633
12	1789	do *b*	—0.046	—0.443	—0.219	—0.683	—0.634	—0.419
13	1849	do *a*	+0.061	—0.193	—0.004	—0.397	—0.313	—0.419
14	1890	do *a*	+0.990	+1.021	+0.996	+0.889	+1.009	+0.760
15	1025	H. H. Heinrich *c*	+0.061	—0.193	—0.219	—0.611	—0.599	—0.919
16	1833	T. S. & J. D. Negus *a*	—0.760	—0.836	—0.683	—0.826	—0.741	—0.847
17	994	H. H. Heinrich *a*	—3.153	—3.300	—3.076	—3.254	—3.313	—3.419
18	1022	do *a*	+2.133	+2.343	+1.996	+2.460	+2.544	+2.046
19	990	do *a*	—0.689	—1.157	—0.861	—1.219	—1.241	—1.169
20	1023	do *a*	—1.474	—1.800	—1.719	—1.969	—1.813	—1.919
21	1021	do *a*	—2.796	—2.657	—3.290	—2.611	—2.670	—3.204

Relative number.	Chronometer number.	Maker.	May 3 to May 10.	May 10 to May 17.	May 17 to May 24.	Temperature of compensation.	Temperature, constant.	First trial number.	Final trial number.
	Time								
	Temperature, Fahrenheit		68.86°	74.91°	74.17°				
	Relative humidity, per cent		66.0	65.1	66.3				
						°			
1	1780	T. S. & J. D. Negus *b*	+0.097	+0.076	+0.350	72.246	0.00103	5.4036	7.2478
2	1850	do *a*	+0.169	—0.067	—0.007	68.219	297	10.4931	13.9527
3	1835	do *a*	—2.296	—2.389	—2.293	68.349	323	12.3388	14.5115
4	1843	do *a*	—1.224	—1.281	—1.257	69.751	298	10.2662	14.7014
5	1737	do *a*	—1.367	—1.317	—1.364	64.624	222	14.4119	15.2843
6	1834	do *a*	—1.474	—1.496	—1.436	62.774	217	9.8915	15.4046
7	1802	do *a*	—0.796	—0.781	—0.721	70.114	380	17.3456	18.7856
8	1813	do *a*	+1.240	+1.433	+1.421	63.084	297	18.6428	19.8616
9	1809	do *b*	—1.939	—2.281	—2.114	68.840	—0.00185	18.7850	20.1098
10	1832	do *a*	—1.331	—1.674	—1.543	74.186	345	17.1242	21.0684
11	1839	do *b*	—2.760	—2.817	—2.757	76.432	—0.00088	13.5719	21.1344
12	1789	do *b*	—0.617	—0.924	—0.757	76.511	177	21.7738	24.3627
13	1849	do *a*	—0.581	—0.603	—0.579	73.320	286	24.1372	25.6086
14	1890	do *a*	+0.633	+0.683	+0.707	68.508	309	24.1176	26.6648
15	1025	H. H. Heinrich *c*	—0.724	—0.710	—0.543	67.625	334	23.1226	27.4907
16	1833	T. S. & J. D. Negus *a*	—0.831	—0.996	—0.936	68.553	472	40.3285	42.5815
17	994	H. H. Heinrich *a*	—3.760	—3.817	—3.650	71.479	310	48.5442	50.4074
18	1022	do *a*	+2.347	+2.754	+2.814	53.077	329	57.1485	58.4664
19	990	do *a*	—1.331	—1.567	—1.650	75.001	244	58.1964	60.7660
20	1023	do *a*	—2.010	—2.496	—2.686	72.485	563	83.5818	87.1956
21	1021	do *a*	—3.117	—2.639	—2.829	71.061	361	145.3915	150.1352

NOTE.—The sign + signifies a losing rate; the sign — signifies a gaining rate.

During the year 41 silver-case comparing watches have been subjected to trial, of which 20 were purchased; 12 silver-case stop watches were subjected to trial, all of which were rejected for failure to comply with requirements of specifications, and 12 more are now undergoing trial; 6 gold-case stop watches were subjected to trial with a view to the purchase of two for use of the Board of Trial of new vessels, but all failed to come up to the requirements of the specifications, and none were purchased.

The 5½-inch meridian transit instrument is used in this department for the determination of time. It is in good condition and has been in continuous service since May, 1893, when it was installed in its present location. Observations are taken with this instrument every second or third night, when practicable, for the determination of the corrections and rates of the three clocks under control of the department, and daily comparisons of the clocks are made to check the correction of the standard mean-time clock.

The performance of the standard mean-time clock has been satisfactory, but having accelerated until its rate was inconveniently large (1.8 seconds), it was stopped on May 25 last and the pendulum lengthened, since which time its rate has been small, the variations in its rate following closely the barometric variations. During the interval from the stopping of the standard clock until its correction and rate could be determined by observation (a period of six days) the Seth Thomas mean-time clock was used as standard in the transmission of the noon signals. The performance of the Seth Thomas mean-time clock has not been satisfactory. It was taken down and examined by Mr. Gardner on July 11 last, and found to have some of its parts badly rusted. After being cleaned it was put up and started again on August 5, but the variations in its rate since that time have been greater than could reasonably be attributed to atmospheric conditions. This clock and the standard mean-time clock are mounted in the chronometer room and surrounded by wooden cases whereby the variations in temperature are not great.

The observing clock (sidereal) is mounted in the south transit room and, although surrounded by two wooden cases, is subjected to great variations in temperature; but, considering the conditions to which it has been subjected, its performance has been satisfactory. A record of the temperature in all three of the clock cases has been kept since August 27 last. The maximum and minimum thermometers that are kept in the cases have been read every morning, and also at the time of observations, so that it has been possible to determine the thermal and barometric coefficients of the clocks. The results, while not all that could be desired, nevertheless furnish means for a comparative study of the performance of the different clocks. The results are as follows: where y represents the barometric coefficient and z the thermal coefficient:

Standard mean-time clock:

$$y = + 0.586\,s \pm .073.$$
$$z = + 0.011\,s \pm .002.$$

Seth Thomas mean-time clock:

$$y = + 0.281\,s \pm .099.$$
$$z = - 0.018\,s \pm .003.$$

South transit observing clock:

$$y = + 0.389\,s \pm .118.$$
$$z = + 0.009\,s \pm .001.$$

The signs of the quantities show the effects of a rise in barometer or thermometer and are reversed for a fall. The barometric coefficient shows the change in daily rate for a change of 1 inch in the reading of the barometer while the thermal coefficient shows the change in the daily rate due to a change of 1° F. in the temperature.

The operation of the time service has been satisfactory so far as the transmission of signals from the Observatory is concerned. The mean-time of noon (75th meridian) as determined by observation has been sent out daily except Sundays. The average error for the year of noon

signals sent out was 0.23 sec., and the maximum, resulting from a long spell of bad weather unfavorable for observing, was 1.42 secs. By the method adopted last February of having monthly reports from the branch hydrographic offices, the Observatory is enabled to find out whether the noon signal is transmitted regularly, and these reports show that it has been received at the various offices with a fair degree of regularity.

Computer F. E. Dennett, as assistant in the department, has rendered valuable and efficient service.

Very respectfully,

W. V. BRONAUGH,
Lieutenant United States Navy, Head of Department.

DEPARTMENT OF MAGNETISM AND METEOROLOGY.

Lieutenant David Peacock, United States Navy, was the head of this department during the year. His report gives the following details:

The self-recording instruments at present consist of the horizontal force, declination, two vertical force and a temperature-recording instrument. The Kew vertical force instrument has been thoroughly overhauled twice during the year and is now giving excellent results. The temperature-recording instrument gives a very accurate record of the temperature, and the advantage of having a continuous temperature record is very great, especially in reducing the records of the vertical force instruments.

Observations have been taken from time to time in order to determine the effect of a change of temperature on the reading of the magnetograms, and these coefficients have been carefully determined.

The deflection experiments for determining the value of a scale division of the horizontal and vertical force instruments have been made as often as possible. As these experiments have to be made during the night, from 10 p. m. until 5 a. m., on account of the electric railway, it has not been practicable to make as many experiments as desirable; at the same time they have been made whenever there was reason to believe that the value of the scale division had changed.

The temperature of the vault has been kept almost constant during the year, the only variations being during the summer months.

The instruments for eye or absolute observations consist of the declinometer, horizontal force or magnetic theodolite, and the dip circle. With the declinometer at least two observations were taken each day, the mean of the results of these observations giving the base-line value for the self-recording declinometer.

With the magnetic theodolite, vibration and deflection experiments were made about every fourth day during the year. These were for determining the horizontal intensity, and from them the base-line value for the horizontal force records was determined.

With the dip circle observations were taken about every fourth day for the dip or inclination. From these observations the base-line value for the vertical force records was determined.

At times observations were taken for determining the true meridian which is used in connection with the declinometer.

The following observations and experiments have been made during the year:

For declination	756
Deflection experiments for horizontal intensity	90
Vibration experiments for horizontal intensity	90
For dip or inclination	88

The results of all the absolute observations have been reduced, and the continuous records of the horizontal force, declination, two vertical force, and temperature-recording instruments have been tabulated for each hour of the year.

During the year the old horizontal force instrument and dip circle were moved to spare piers, and the piers that they occupied prepared for the new instruments, upon which the latter are now mounted.

The proof sheets for the publication of the records of 1894 have been read and arranged for the Public Printer.

The records for 1895 have been reduced, tabulated, and arranged, and are ready for the printer. The entire work of computing, writing, copying, and making the drawings was done by Lieutenant Peacock.

During the year simultaneous observations of the declination and horizontal force instruments have been made several times. These observations were taken every five seconds for one hour. They were taken, principally, to determine the fields of simultaneous movements of a magnetic needle when acted upon only by the earth's magnetic force. In this work Assistant Astronomer George A. Hill and Computer Theo I. King assisted.

The new magnetic theodolite and dip circle made by Dr. M. Th. Edelmann have been installed. The essential parts are accurately and well made, but the details of finish and minor attachments were not satisfactory. Nevertheless, the efficiency and accuracy of the instruments are not impaired, as all necessary changes and substitutions have, after considerable trouble and delay, been made.

The following coefficients and constants have been determined for use with the new magnetic theodolite:

Temperature coefficients, designated as q and q', $q=0.00044, q'=0.00000079$.

The moment of inertia, the mean value of many observations, was 0.0260167.

The value of a scale division in the telescope of the magnetic theodolite = 59.2114″.

The coefficient of induction designated as $\mu = 0.00000575$.

In making the reductions the following values were taken. Ratio of circumference to diameter of circle = 3.141592. The linear coefficient of expansion of brass = 0.0000185. The linear coefficient of expansion of steel = 0.0000120. The error of graduation of the deflecting bar is zero.

The inertia bar was weighed and measured at the Government department of weights and measures at the United States Coast and Geodetic Survey Office, the dimensions being as follows:

Inertia bar No. 2:
Mass, 135.2928 grammes.
Mean length, 99.884 mm. at temperature 13.35° C.
Mean diameter 14.189 mm. at temperature 13.35° C.

In determining the above coefficients many independent observations were taken and in most cases entirely different methods were used, the results obtained by the several methods agreeing very closely.

As the magnets are new it is important that in a few years these coefficients and constants be checked by new observations and experiments, as the conditions of new magnets are liable to change.

The new instruments will be used for the observations after June 30, 1896. In the installation of these instruments—as such work had never been done at this Observatory before—much apparatus had to be designed and improvised. In this work Mr. Gardner rendered very valuable assistance. *Mr. F. E. Dennett*, computer, is entitled to credit

for assisting in adjusting the instruments and in reducing the formulæ for use in computing and reducing the observations.

The following tables have been computed and arranged for use in the reductions of the observations and experiments made with the new magnetic theodolite:

Table I, for the value of P, the argument being log sin u — log sin u'.

Table II, temperature corrections to be applied to the value of P as found in Table I. Arguments are log sin u — log sin u', and the mean temperature of the deflection experiment.

Table III, giving the logarithm of the square of the time of vibration, argument being the time for 180 vibrations.

Table IV, giving the value of $\frac{H}{F}$ = ratio of the force of torsion of the suspending thread of the vibration magnet to the magnetic directive force, argument being the scale division for 90° torsion.

Table V, giving the value of $[b]=(q+3\varepsilon)\,t_d$, the argument being the mean temperature of the deflection experiment.

Table VI, giving the logarithm of $(1+b)$, the argument being the mean temperature of the deflection experiment.

Table VII, giving the value of $a'=(q+2\varepsilon)\,t_v+q'\,t_v{}^2$, the argument being the mean temperature of the vibration experiment.

Table VIII, giving the corrections of the thermometer, No. 7562, used in making vibration and deflection experiments.

Table IX, giving the value of $\frac{2s}{86400}$ when s is the daily rate of the chronometer, the argument being the daily rate of chronometer.

Table X, giving the value of $\mu \div \left(\frac{m}{X}\right)_0$, the argument being the mean of the logarithms of B $(1+b)$ sin u and B $(1+b)$ sin u'.

Table XI, giving the co-logaritim of $\left[2\left(1-\frac{2\mu}{r_0{}^3}+\frac{P}{r_0{}^3}\right)\right]$, the argument being the value of P.

Table XII, giving the moment of inertia and the value of K_t, the moment of inertia of the vibration magnet, including its suspending frame and other appendages, at temperature 0° C.

Table XIII, giving the value of $r_0 = 0.3$ meter and $r_0 = 0.4$ meter at different temperatures and the logarithms of the cubes of these values.

The meteorological records have been taken and recorded by Messrs. Horigan, Cahill, and Henderson, watchmen.

Very respectfully,

DAVID PEACOCK,
Lieutenant, U. S. Navy, Head of Department.

BUILDINGS AND GROUNDS.

Provision has been made for the erection of two houses for observers. It is believed that these will be completed and ready for occupancy by January 1, 1897.

Congress at its last session appropriated $1,800 for repairs to the main building, the necessity of which was set forth in my last report. These repairs will be made with all practicable dispatch consistent with proper protection to the building while the work is being done.

The progress in grading and improving the grounds and roads has been satisfactory, and the results are beginning to be manifest in the appearance of the surroundings of the Observatory.

LIBRARY.

The duties of the librarian were performed by Assistant Librarian William D. Horigan, under the general supervision of the library committee.

The contents of the library at the beginning and ending of the fiscal year 1895–96 were:

	Volumes.	Pamphlets.	Total.
Contents, July 1, 1895	14,906	3,286	18,192
Accessions	550	18	568
Contents, July 1, 1896	15,456	3,304	18,760

Of the 568 accessions 253 were received as exchanges and 315 were purchased.

The clerical work of the Observatory, which embraces the preparation of requisitions and vouchers and keeping the accounts of expenditures, has been efficiently performed by Mr. Thomas Harrison, assisted by Mr. Robert H. Coker.

The estimates for the fiscal year ending June 30, 1898, are herewith submitted.

Very respectfully, R. L. PHYTHIAN,
Commodore, U. S. N., Superintendent of Naval Observatory.

The CHIEF OF THE BUREAU OF EQUIPMENT,
Navy Department.

The following is the report of the naval inspector of electric lighting:

The electric plants of the following ships have been completed and are now in operation, viz: *Indiana*, *Massachusetts*, *Oregon*, *Monadnock*, and *Terror*. The plant of the *Brooklyn* is also practically finished and that of the *Puritan* well advanced. The installation of the plants of the *Iowa*, *Nashville*, *Wilmington*, *Helena*, gunboats Nos. 14 and 15, and torpedo boats Nos. 3, 4, 5, 6, 7, and 8 has been carried on so as to keep pace with the work of construction. Light lists and wiring plans for the *Kearsarge* and *Kentucky* have been prepared.

As two of the turrets and several of the ammunition hoists of the *Brooklyn* are to be operated by means of electric motors, the generating plant of that ship will consist of three generators of 32 kilowatts each and two of 24 kilowatts, giving a total output of 144 kilowatts, which is nearly double that of the *New York's* plant. The switchboard connections will be so designed that each and all of the generators will be available for both lighting and motor service.

The plants of ships on active service have been kept in repair, and have, in general, operated satisfactorily. Those of the *Baltimore*, *Concord*, *Petrel*, and *Charleston* are receiving a thorough overhauling while the ships are temporarily out of commission. The new plant of the *Boston* was completed during the year, and those of the *Miantonomoh* and *Vesuvius* are being put in readiness for service.

Attention has been given to the improvement of the electrical apparatus and material used in ships' installations, guided by the experience gained in their practical operation in service. New devices which gave promise of being superior to those in use, or to be of value as additions to the electric plants of ships, have been tried, and, if found satisfactory, have been adopted.

The experiments referred to in my last report have been in progress at the Norfolk and New York navy-yards, but thus far only a moderate degree of success has been obtained. The attempts to blow a considerable number of fog horns or whistles simultaneously by means of compressed air, with the view of using such a system for signalling the

order to close water-tight doors, have not been sufficiently satisfactory to warrant the adoption of the plan.

In the trials which have been made of using a tangential water wheel for driving a dynamo, the water pressure being supplied by means of steam pumps, difficulty has been encountered in governing the speed of the wheel within the limits necessary for the proper operation of the dynamo, and as yet, although several means have been tried, none have proved practicable.

With the ordinary form of incandescent lamp, the filament continues to glow for an appreciable time after the current is turned off, which feature is prejudicial to its use for signalling purposes. The attempt is being made to overcome this difficulty by making a lamp with a number of small filaments connected in multiple, which, while giving in the aggregate the desired candlepower, will quickly cease to glow on account of the small size of the several filaments. A lamp has been tested which gives excellent results in this respect, but which requires further improvement in some of its details.

A small incandescent lamp of 6 candlepower, and of the proper shape and size, has been designed for the inspection of the interior of automobile torpedoes, and will hereafter be supplied to ships for that purpose.

With the increasingly complicated structural arrangements of our new ships has arisen the necessity for rapid, convenient, and efficient means of interior communication between their several compartments. Telephones have been installed extensively in the larger new ships, and, it is believed, will give better service than voice pipes, excepting in cases where voice-pipe leads can be made straight and short.

Increased facilities for making repairs to the electric plants of ships have been provided at the New York, Norfolk, and Mare Island navy-yards, with the result of considerably decreasing the cost and time required for such work.

Respectfully submitted.

W. MAYNARD,
Commander, U. S. Navy.

The following is the report of the superintendent of compasses:

Compass reports, reports of magnetic surveys, and observations relating to compasses taken while the vessels were in dock have been received, examined, and placed on file; one invention pertaining to method of compensating compasses has been submitted, carefully examined, and reported upon; parts of new compasses and instruments have been examined in detail in the office and final examinations of completed instruments have been made by an officer from the office at the manufacturer's or at the Naval Observatory. Observations for location, adjustment, and compensation of compasses, and approximate or complete compensations, have been made by the officers of the office in the following vessels: *Indiana*, *Maine*, *Katahdin*, *Terror*, *Massachusetts*, *Brooklyn*, *Standish*, *Bancroft*, and *Texas* (the latter after extensive repairs). Approximate locations for compasses have been given from the plans submitted for vessels now under construction.

Notwithstanding the very unfavorable conditions surrounding the compasses of the *Indiana*, *Massachusetts*, *Texas*, and some other vessels, by which extraordinary magnetic forces, far exceeding in strength the horizontal or directive force of the earth, it has been found that the binnacle now in use fully meets all requirements in supplying the necessary neutralizing forces, and the compensations made prove satisfactory.

In some cases the use of "Flinders bars" has proven very unsatisfactory. The bars themselves have become magnetized and unstable, producing large and varying deviations. These bars have therefore been removed from the *Raleigh* and *Monterey*, and their use is not found necessary or advisable in the vessels most recently constructed.

New instruments have been supplied as follows: 30 binnacles (10 aluminum, 20 composition), 10 Peloruses, D. S., 18 sets magnetic instruments, 20 chain boxes, 360 pounds chain, 15 supporting tables, 30 azimuth circles, type III, 12 bars and pintles, 50 boat compasses (2½-inch). In addition to these, 20 boat compasses (4-inch) have been repaired and converted into conning binnacles and compasses, a compact form of binnacle and compass capable of easy compensation by the "starboard-angle" principle, and especially intended for use in conning towers.

From April 20 to September 1 the office was without an assistant, and it has been impossible to carry on experimental work as desired, yet experiments have been made with a device for correcting quadrantal deviation, and it is believed that the chain boxes and spheres now in use, and which alone often render it impossible to obtain good bearings with the standard compass and azimuth circle, will soon be entirely discarded. The new device is small and in no way interferes with any line of sight while taking bearings, and greatly reduces the weight of binnacles and attachments.

During the past year six officers of the Navy and one of the Revenue Marine Service have received instruction in practical compensation of compasses. Every officer should receive such instructions before taking charge of the compasses on board the new ships, and I earnestly recommend that when possible officers who have not had such instruction be ordered here to receive it before assuming the duties of navigator.

The personnel of the office has been changed as follows: Ensign T. P. Magruder was detached April 20, 1896; Lieutenant (junior grade) J. D. McDonald reported for duty September 1, 1896.

Respectfully,

GILES B. HARBER,
Lieutenant, U. S. Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Equipment, Navy Department.

Detailed objects of expenditure, and explanations	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES, BUREAU OF EQUIPMENT.			
One chief clerk (appropriated, act May 28, 1896, R. S., p. 70, sec. 416)	$1,800.00		
One clerk of class three (appropriated, act May 28, 1896, pamphlet edition Digest)	1,600.00		
One clerk of class two (same act, pamphlet edition Digest, p. 29)	1,400.00		
One clerk of class one (same act)	1,200.00		
One copyist (same act)	900.00		
One assistant messenger (same act)	720.00		
One laborer (same act)	660.00		
		$8,280.00	$8,280.00
EQUIPMENT OF VESSELS.			
For purchase of coal for steamers' and ships' use, including expenses of transportation, storage, and handling the same; hemp, wire, iron, and other materials for the manufacture of cordage, anchors, *cables, galleys*, and chains; *canvas for the manufacture of sails*, awnings,			

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
EQUIPMENT OF VESSELS—continued.			
hammocks, and other work; water for steaming purposes; stationery for commanding and navigating officers of ships, equipment officers on shore and afloat, and for the use of courts-martial on board ship; and for the purchase of all other articles of equipment at home and abroad, and for the payment of labor in equipping vessels and manufacture of equipment articles in the several navy-yards; foreign and local pilotage and towage of ships of war; services and materials in repairing, correcting, adjusting, and testing compasses on shore and on board ship; nautical and astronomical instruments, and repairs to same; libraries for ships of war; professional books and papers, and drawings and engravings for signal books; naval signals and apparatus, namely, signals, lights, lanterns, rockets, running lights, compass fittings, including binnacles, tripods, and other appendages of ships' compasses; logs and other appliances for measuring the ship's way, and leads and other appliances for sounding; lanterns and lamps, and their appendages, for general use on board ship for illuminating purposes, and oil and candles used in connection therewith; bunting and other materials for making and repairing flags of all kinds; photographic instruments and materials; musical instruments and music; and installing and maintaining electric lights and interior signal communications on board vessels of war (appropriated June 10, 1896, pamphlet edition Digest, pp. 14, 15) ..	.....	$1,458,117.00	$1,312,147.00
CONTINGENT, BUREAU OF EQUIPMENT.			
For freight and transportation of equipment stores, packing boxes and materials, printing, advertising, telegraphing, books and models, stationery for the Bureau, furniture for equipment offices in navy-yards, postage on letters sent abroad, ferriage, ice, lighterage of ashes, and emergencies arising under cognizance of the Bureau of Equipment unforeseen and impossible to classify (appropriated June 10, 1896, pamphlet edition Digest, p. 15)..	.....	12,000.00	12,000.00
INCREASE OF THE NAVY EQUIPMENT.			
Toward the completion of the equipment outfit of the new vessels heretofore authorized by Congress (appropriated June 10, 1896, pamphlet edition Digest, p. 9).....	$162,628.00		
For the installation of electric plants in gunboats Nos. 10, 11, 12, 13, in case the Department decides such should be installed (submitted)	70,000.00		
		232,628.00	237,000.00
NOTE.—It is requested that of the amount appropriated under this head the sum of $14,128 be made immediately available.			
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H.:			
One clerk (appropriated, June 10, 1896, pamphlet edition Digest, p. 5)	$1,000.00		
Navy-yard, Boston, Mass.:			
One superintendent of ropewalk (same act)	1,875.00		
One clerk (same act)	1,400.00		
One clerk (same act)	1,300.00		
One writer (same act)	950.00		
Navy-yard, New York:			
One clerk (same act)	1,400.00		
One clerk (same act)	1,200.00		
Navy-Yard, League Island, Pa.:			
One clerk (same act)	1,200.00		
Navy-yard, Norfolk, Va.:			
Two clerks, at $1,200 each (same act)	2,400.00		
Navy-yard, Mare Island, Cal.:			
One clerk (same act)	1,200.00		
Navy-yard, Washington, D. C.:			
One clerk, who shall also perform the clerical duties for the board of labor employment at said navy-yard *(same act)*	1,000.00		
		15,525.00	19,625.00

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES, NAVAL OBSERVATORY.			
One assistant astronomer (R. S., p. 27, sec. 167; act Aug. 5, 1882, Stat. L. 22, p. 245, sec. 1; act May 28, 1896)	$2,000.00		$2,000.00
Two assistant astronomers, at $1,800 each (same act)	3,600.00		3,600.00
One clerk of class four (same act)	1,800.00		1,800.00
One clerk of class one (same act)	1,200.00		1,200.00
One instrument maker (same act)	1,500.00		1,500.00
One electrician (same act)	1,500.00		1,500.00
One photographer (same act)	1,200.00		1,200.00
Five computers, at $1,200 each (same act)	6,000.00		6,000.00
One assistant librarian (same act)	1,200.00		1,200.00
One foreman and captain of the watch (same act)	1,000.00		1,000.00
One carpenter (same act)	1,000.00		1,000.00
One engineer (same act)	1,000.00		1,000.00
One skilled laborer (same act)	720.00		720.00
Two firemen, at $720 each (same act)	1,440.00		1,440.00
Six watchmen, at $720 each (same act)	4,320.00		4,320.00
One elevator conductor (same act)	720.00		720.00
Eleven laborers, at $660 each (same act)	7,260.00		7,260.00
		$37,460.00	
CONTINGENT AND MISCELLANEOUS EXPENSES, NAVAL OBSERVATORY.			37,460.00
Miscellaneous computations (act May 28, 1896)	1,200.00		1,200.00
Professional and scientific books, periodicals, engravings, photographs, and fixtures for the library (same act)	1,000.00		1,000.00
Apparatus and instruments, and for repairs of the same (same act)	2,000.00		2,000.00
Repairs to buildings, fixtures, and fences; furniture, gas, chemicals, and stationery; freight (including transmission of public documents through the Smithsonian exchange), foreign postage, and expressage; plants, fertilizers, and all contingent expenses (increase of $500 submitted). See note (*b*) (same act)	3,000.00		2,500.00
Fuel, oil, grease, tools, pipe, wire, and other materials needed for the maintenance and repair of boilers, engines, heating apparatus, electric lighting and power plant, and water-supply system; purchase and maintenance of teams; material for boxing nautical instruments for transportation; paints, telegraph and telephone service, and incidental labor (same act)	7,500.00		7,500.00
		14,700.00	14,000.00
NOTE.—(*b*) The amount asked for ($3,000) is $1,550 less than that appropriated for 1892. The amount appropriated for 1897 ($2,500) is not much more than is required for the above items other than repairs, leaving a very small amount available for current repairs, the want of which is leading to deterioration that will, if further overlooked, soon make extensive and costly repairs necessary. This necessity may be avoided by the judicious annual expenditure of the increase asked for.			
PUBLIC WORKS UNDER THE NAVY DEPARTMENT.			
NAVAL OBSERVATORY.			
Grounds and roads: Continuing grading, extending roads and paths, clearing and improving grounds of the Naval Observatory (act June 10, 1896)	5,000.00	5,000.00	10,000.00
SALARIES, NAUTICAL ALMANAC OFFICE.			
Salaries of assistants in preparing for publication the American Ephemeris and Nautical Almanac, viz:			
Three assistants, at $1,600 each (acts Aug. 5, 1882, R. S. 22, p. 245; May 28, 1896)	4,800.00		
Two assistants, at $1,400 each (same acts)	2,800.00		
Three assistants, at $1,200 each (same acts)	3,600.00		
Two assistants, at $1,000 each (same acts)	2,000.00		
One copyist and typewriter, at $900 (same acts)	900.00		
One assistant messenger, at $720 (same acts)	720.00		
One messenger boy, at $420 (same acts)	420.00		
		15,240.00	15,480.00
Pay of computers, on piecework, in preparing for publication the American Ephemeris and Nautical Almanac, and in improving the tables of the planets, moon, and stars (act May 28, 1896)	7,000.00	7,000.00	7,000.00

Schedule of bids for coal, provender, and ice at Naval Observatory, opened May 7, 1896.

CLASS 1.—COAL.

J. Maury Dove	$4,626.00
J. Edward Chapman	*4,320.00
George R. Sheriff	5,580.00
Finucane & Williams	4,410.00
John B. Daish	4,815.00

CLASS 2.—PROVENDER.

Danenhower & Co	410.55
John J. O'Day	407.65
W. M. Galt & Co	*404.50
John B. Daish	409.05

CLASS 3.—ICE.

Independent Ice Company	per hundred	*.35

Very respectfully,

F. E. CHADWICK,
Chief of Bureau.

The SECRETARY OF THE NAVY.

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*Awarded.

REPORT

OF

THE CHIEF OF THE BUREAU OF NAVIGATION.

NAVY DEPARTMENT, BUREAU OF NAVIGATION,
Washington, D. C., October 1, 1896.

SIR: I have the honor to submit herewith a report (marked A) of the movements and duties of the ships of the Navy during the past year, a copy (marked B) of the report of the Superintendent of the Naval Academy, a copy (marked C) of the report of the Commandant of the Training Station, and a copy (marked D) of the report of the Hydrographer to the Bureau of Navigation.

Estimates for the support of the Bureau, the Naval Academy, the Training Station, the Naval War College and Torpedo School, and the Hydrographic Office are also submitted (marked E).

During the year the *Indiana*, *Massachusetts*, *Oregon*, *Texas*, *Boston*, *Monadnock*, *Terror*, *Katahdin*, *Monongahela*, and *Adams* have been commissioned for service. The *Texas*, *Baltimore*, *Charleston*, *Concord*, *Ranger*, *Petrel*, and *Monongahela* have been placed out of commission.

During the fiscal year ended June 30, 1896, 4,376 men and 485 apprentices were enlisted or reenlisted in the Navy. Eight hundred and seventy-six of the men enlisted under continuous-service certificates.

One hundred and twelve special-service men were enlisted for the Coast and Geodetic Survey, and 110 special-service men were enlisted for the vessels of the Fish Commission.

Eleven thousand six hundred and fifty-four men and 2,390 boys, candidates for enlistment, were rejected for physical disqualifications and other causes; 2,640 men and 205 apprentices were discharged—2,067 men and 118 apprentices by reason of expiration of enlistment, 121 men and 26 apprentices for disability, 185 men by reason of services being no longer required, 77 men and 1 apprentice at their own request, 47 men and 10 apprentices by purchase, 9 men and 2 apprentices by request of their commanding officers, 67 men and 15 apprentices for bad conduct, 6 men on account of illegal enlistment, 14 men and 2 apprentices for inaptitude, and 47 men and 13 apprentices as undesirable. Eight hundred and ninety-five men and 146 apprentices deserted during the year. Of this number 729 men and 135 apprentices deserted in home ports. Thirty-five men and 3 boys died.

Under sections 4756 and 4757 of the Revised Statutes 80 pensions have been allowed and 11 disallowed. Six thousand two hundred and fifty-two dollars and ninety-five cents has been paid to enlisted men in prizes for target practice with great guns, machine guns, and small arms.

At the close of the fiscal year 31 per cent of the enlisted men in the Navy were serving under continuous service. More than 72 per cent of the enlisted men were American citizens, and more than 82 per cent of the apprentice boys were American born.

F. M. RAMSAY,
Chief of Bureau.

The SECRETARY OF THE NAVY.

A.

VESSELS SERVING ON STATIONS AND DUTIES PERFORMED BY EACH.

NORTH ATLANTIC STATION.

Commander in chief: Rear-Admiral F. M. Bunce.
Ships: *Indiana*, *Massachusetts*, *New York* (flagship), *Columbia*, *Maine*, *Texas*, *Newark*, *Amphitrite*, *Cincinnati*, *Raleigh*, *Katahdin*, *Montgomery*, and *Fern*.

ASIATIC STATION.

Commander in chief: Rear-Admiral C. C. Carpenter until November 16, 1895, and Rear-Admiral F. V. McNair since December 21, 1895.
Ships: *Olympia* (flagship), *Baltimore*, *Charleston*, *Boston*, *Detroit*, *Concord*, *Yorktown*, *Monocacy*, *Machias*, and *Petrel*.

PACIFIC STATION.

Commander in chief: Rear-Admiral L. A. Beardslee.
Ships: *Philadelphia* (flagship), *Monterey*, *Monadnock*, *Marion*, *Bennington*, *Adams*, *Alert*, and *Ranger*.

SOUTH ATLANTIC STATION.

Commander in chief: Rear-Admiral C. S. Norton until April 28, 1896, and Capt. Yates Stirling since that date.
Ships: *Newark* (flagship), *Lancaster*, *Castine*, and *Yantic*.

EUROPEAN STATION.

Commander in chief: Rear-Admiral W. A. Kirkland until November 12, 1895, and Rear-Admiral T. O. Selfridge since that date.
Ships: *Minneapolis*, *San Francisco* (flagship), and *Marblehead*.

SHIPS ON SPECIAL SERVICE.

Monongahela, *Dolphin*, *Alliance*, *Essex*, *Thetis*, *Bancroft*, *Michigan*, *Cushing*, and *Pinta*.

SHIPS UNASSIGNED TO STATIONS.

Oregon and *Terror*.

Vessels serving on stations and duties performed by each.

FIRST RATE.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Indiana, Capt. R. D. EVANS, commanding.				
			Knots.	
League Island, Pa.	.....	Jan. 7, 1896	.....	Commissioned Nov. 20, 1895.
Newport, R. I	Jan. 10, 1896	Jan. 14, 1896	327	
Cape Henry	Jan. 15, 1896	Jan. 16, 1896	358	
Hampton Roads, Virginia	Jan. 16. 1896	Jan. 30, 1896	18	Assigned to North Atlantic Station Feb. 27, 1896.
Newport News, Virginia	Jan. 30, 1896	Mar. 2, 1896	11	
Hampton Roads, Virginia	Mar. 2, 1896	Mar. 10, 1896	11	
Port Royal, S. C.	Mar. 13, 1896	Mar. 14, 1896	470	
Bay Point	Mar. 14, 1896	Mar. 15, 1896	8	
Port Royal, S. C.	Mar. 15, 1896	.....do.....	8	
Bay Point	.....do.....	Mar. 27, 1896	8	
Port Royal, S. C.	Mar. 27, 1896	Apr. 8, 1896	8	
Port Royal Sound	Apr. 8, 1896	Apr. 10, 1896	8	Inspection.
Hampton Roads, Virginia	Apr. 11, 1896	Apr. 12, 1896	495	
Newport News, Va.	Apr. 12, 1896	Apr. 17, 1896	8	
Hampton Roads, Virginia	Apr. 17, 1896	Apr. 18, 1896	8	
Tompkinsville, N. Y	Apr. 19, 1896	Apr. 20, 1896	283	
Navy-yard, New York	Apr. 20, 1896	June 10, 1896	6	
Tompkinsville, N. Y.	June 10, 1896	June 24, 1896	6	Target practice.
Southeast Sandy Hook	June 24, 1896	June 27, 1896	30	
Tompkinsville, N. Y	June 27, 1896	July 10, 1896	30	
Off Lewes, Del.	July 11, 1896	July 17, 1896	158	Duty in connection with Pennsylvania Naval Militia.
Tompkinsville, N. Y.	July 18, 1896	Aug. 1, 1896	980	Squadron drill.
Hampton Roads, Virginia	Aug. 9, 1896	Aug. 10, 1896	8	
Newport News, Va.	Aug. 10, 1896	Aug. 12, 1896	8	
Hampton Roads, Virginia	Aug. 12, 1896	Aug. 15, 1896	962	
Tompkinsville, N. Y.	Aug. 23, 1896	Sept. 1, 1896	381	
Off Fishers Island, N. Y.	Sept. 4, 1896	Sept. 16, 1896	339	
Tompkinsville, N. Y.	Sept. 19, 1896	.....	.....	
Total distance sailed	.....	.....	4, 937	
Massachusetts, Capt. FREDERICK ROLLGERS, commanding.				
Philadelphia, Pa.	June 10, 1896	Aug. 4, 1896	.....	In commission, June 10, 1896.
Newport News, Va.	Aug. 7, 1896	Aug. 20, 1896	157	Assigned to North Atlantic Station Aug. 14, 1896.
Tompkinsville, Staten Island....	Aug. 23, 1896	Sept. 2, 1896	473	
Newport, R. I.	Sept. 4, 1896	Sept. 16, 1896	336	
Tompkinsville, Staten Island....	Sept. 18, 1896	.....	345	
Total distance sailed	.....	.....	1, 311	
Oregon, Capt. H. L. HOWISON, commanding.				
San Francisco, Cal.	.....	.....	.....	Commissioned July 15, 1896.
New York, Capt. W. S. SCHLEY, commanding.				
Hampton Roads, Virginia	Oct. 4, 1895	Oct. 18, 1895	.....	North Atlantic Station.
Newport News, Va	Oct. 18, 1895	Oct. 21, 1895	8	
Hampton Roads, Virginia	Oct. 26, 1895	Nov. 6, 1895	.....	
Tompkinsville, Staten Island....	Nov. 7, 1895	Nov. 9, 1895	244	
New York, N. Y.	Nov. 9, 1895	Dec. 16, 1895	5	
Hampton Roads, Virginia	Dec. 17, 1895	Jan. 20, 1896	225	
Newport News, Va.	Jan. 20, 1896	Jan. 22, 1896	7	
Hampton Roads, Virginia	Jan. 22, 1896	Feb. 8, 1896	7	
Tompkinsville, Staten Island....	Feb. 9, 1896	Feb. 15, 1896	300	
Newport News, Va	Feb. 16, 1896	Feb. 19, 1896	300	
Hampton Roads, Virginia	Feb. 19, 1896	Mar. 22, 1896	7	
Do	Mar. 23, 1896	Apr. 17, 1896	280	Target practice.
Tompkinsville. Staten Island....	Apr. 15, 1896	Apr. 22, 1896	280	
Hampton Roads, Virginia	Apr. 23, 1896	Apr. 24, 1896	7	
Newport News, Va	Apr. 24, 1896	Apr. 25, 1896	7	
Hampton Roads, Virginia	Apr. 25, 1896	May 6, 1896	280	
Tompkinsville, Staten Island....	May 8, 1896	May 25, 1896	100	
Do	May 27, 1896	May 30, 1896	8	
North River, Fifty-sixth street..	May 30, 1896	.....do.....	8	
Tompkinsville, Staten Island....	.....do.....	June 15, 1896	6	
Navy-yard, New York	June 15, 1896	July 28, 1896	5	
Tompkinsville, N. Y.	July 28, 1896	Aug. 1, 1896	5	Squadron drills.

Vessels serving on stations and duties performed by each—Continued.

FIRST RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
New York, Capt. W. S. SCHLEY, commanding—Continued.				
			Knots.	
Fort Monroe, Va	Aug. 9, 1896	Aug. 16, 1896	980	
Tompkinsville, N. Y	Aug. 23, 1896	Sept. 1, 1896	902	
Fishers Island, N. Y	Sept. 4, 1896	Sept. 16, 1896	389	
Tompkinsville, N. Y	Sept. 19, 1896	Oct. 1, 1896	339	
Fort Monroe, Va	Oct. 5, 1896			
Total distance sailed			4,759	
Columbia, Capt. J. H. SANDS, commanding.				
Lynn Haven Bay, Virginia	Sept. 28, 1895	Oct. 1, 1895	370	North Atlantic Station.
Hampton Roads, Virginia	Oct. 4, 1895	Oct. 18, 1895	12	Cruising with squadron.
Newport News, Va	Oct. 18, 1895	Oct. 21, 1895	520	
Yorktown, Va	Oct. 26, 1895	Nov. 1, 1895	50	
Hampton Roads, Virginia	Nov. 2, 1895	Jan. 20, 1896	12	
Newport News, Va	Jan. 20, 1896	Jan. 22, 1896	12	
Hampton Roads, Virginia	Jan. 22, 1896	Feb. 4, 1896	290	
New York, N. Y	Feb. 5, 1896	Feb. 16, 1896	290	
Hampton Roads, Virginia	Feb. 17, 1896	Feb. 19, 1896	12	
Newport News, Va	Feb. 19, 1896	Feb. 23, 1896	12	
Hampton Roads, Virginia	Feb. 23, 1896	Mar. 23, 1896	12	
Newport News, Va	Mar. 23, 1896	Mar. 25, 1896	12	
Hampton Roads, Virginia	Mar. 25, 1896	Apr 11, 1896	280	
Tompkinsville, Staten Island	Apr. 12, 1896	Apr. 19, 1896	280	
Hampton Roads, Virginia	Apr. 20, 1896	Apr. 20, 1896	12	
Newport News, Va	....do	May 1, 1896	12	
Hampton Roads, Virginia	May 1, 1896	May 2, 1896	15	
Norfolk Navy-Yard, Va	May 2, 1896	June 3, 1896	300	
Tompkinsville, Staten Island	June 4, 1896	July 7, 1896	460	
Castine, Me	July 8, 1896	July 11, 1896	170	Castine Centennial.
Boston, Mass	July 11, 1896	July 22, 1896	1,080	Duty in connection with Massachusetts Naval Militia.
Brunswick, Ga	July 29, 1896	July 30, 1896	750	Tow Passaic to Brunswick, Ga.
Tompkinsville, N. Y	Aug. 1, 1896	Aug. 8, 1896	300	Squadron drill.
Hampton Roads, Virginia	Aug. 9, 1896	Aug. 15, 1896	1,000	
Tompkinsville, N. Y	Aug. 19, 1896	Sept. 1, 1896	380	
Fishers Island, N. Y	Sept. 4, 1896	Sept. 16, 1896	390	
Tompkinsville, N. Y	Sept. 18, 1896			
Total distance sailed			7,033	
Minneapolis, Capt. G. H. WADLEIGH, commanding.				
Lynn Haven Bay, Virginia	Sept. 28, 1895	Oct. 1, 1895		North Atlantic Station.
Do	Oct. 3, 1895	Oct. 4, 1895	275	
Hampton Roads, Virginia	Oct. 4, 1895	Oct. 18, 1895	14	
Newport News, Va	Oct. 18, 1895	Oct. 21, 1895	8	
Yorktown, Va	Oct. 26, 1895	Nov. 1, 1895	580	
Hampton Roads, Virginia	Nov. 2, 1895	Nov 5, 1895	54	
Navy-yard, Norfolk, Va	Nov. 5, 1895	Nov. 23, 1895	12	
Newport News, Va	Nov. 23, 1895	Nov. 26, 1895	16	
Hampton Roads, Virginia	Nov. 26, 1895	Nov. 27, 1895	8	Nov. 27, 1895, detailed from North Atlantic Station and assigned to European Station.
Gibraltar, Spain	Dec. 13, 1895	Dec. 20, 1895	3,316	
Alexandretta, Syria	Dec. 26, 1895	Jan. 6, 1896	2,027	
Smyrna, Turkey	Jan. 10, 1896	Jan. 20, 1896	672	
Mersina, Syria	Jan. 23, 1896	Feb. 10, 1896	667	
Alexandretta, Syria	Feb. 11, 1896	Feb. 14, 1896	87	
Mersina, Syria	Feb. 15, 1896	Mar. 1, 1896	96	
Taranto, Italy	Mar. 5, 1896	Apr. 14, 1896	963	
Naples, Italy	Apr. 16, 1896	Apr. 27, 1896	985	
Gibraltar, Spain	May 1, 1896	May 2, 1896	1,166	
Southampton, England	May 7, 1896	May 7, 1896	1,624	
Cronstadt, Russia	May 13, 1896	June 19, 1896	39	In connection with coronation of the Czar.
Serskar, Russia	June 20, 1896	June 22, 1896	124	
Helsingfors, Russia	June 22, 1896	June 29, 1896	241	
Stockholm, Sweden	June 30, 1896			
Total distance sailed			12,978	

Vessels serving on stations and duties performed by each—Continued.

FIRST RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Maine, Capt. A. S. CROWNINSHIELD, commanding.			*Knots.*	
New York	Sept. 17, 1895	Nov. 5, 1895	.....	Commissioned Sept. 17, 1895.
Gardiners Bay	Nov. 10, 1895	Nov. 16, 1895	152	
Newport, R. I	Nov. 16, 1895	Nov. 23, 1895	52	
Portland, Me	Nov. 25, 1895	Nov. 29, 1895	347	
Newport, R. I	Nov. 30, 1895	Dec. 12, 1895	301	Speed trial.
Do	Dec. 12, 1895	Dec. 22, 1895	95	Inspection.
Tompkinsville, Staten Island	Dec. 23, 1895	Dec. 24, 1895	131	Assigned to North Atlantic Station.
Fort Monroe, Va	Dec. 25, 1895	Dec. 26, 1895	266	
Newport News, Va	Dec. 29, 1895	Dec. 29, 1895	8	
Fort Monroe, Va	.....do	Jan. 9, 1896	8	Tactical drill.
Newport News, Va	Jan. 10, 1896	Jan. 11, 1896	8	
Fort Monroe, Va	Jan. 11, 1896	Jan. 30, 1896	8	
Newport News, Va	Jan. 30, 1896	Feb. 1, 1896	8	
Norfolk, Va	Feb. 1, 1896	Feb. 5, 1896	.....	
Fort Monroe, Va	Feb. 5, 1896	Mar. 6, 1896	.....	
Newport News, Va	Mar. 6, 1896	Mar. 7, 1896	8	
Fort Monroe, Va	Mar. 7, 1896	Mar. 10, 1896	8	Target practice.
Do	Mar. 12, 1896	Apr. 21, 1896	.....	
Norfolk, Va	Apr. 21, 1896	June 2, 1896	13	
Fort Monroe, Va	June 2, 1896	June 4, 1896	13	
Key West, Fla	June 8, 1896	July 30, 1896	946	
Norfolk, Va	Aug. 3, 1896	Aug. 25, 1896	850	
Tompkinsville, N. Y	Aug. 26, 1896	Sept. 1, 1896	291	Squadron drill.
Fishers Island, N. Y	Sept. 4, 1896	Sept. 16, 1896	421	
Tompkinsville, N. Y	Sept. 19, 1896	.....	372	
Total distance sailed	.....	.....	4,306	
Texas, Capt. HENRY GLASS, commanding.				
Hampton Roads, Virginia	Sept. 5, 1895	Sept. 6, 1895	12	Preliminary trial of machinery.
Do	Sept. 6, 1895	Sept. 7, 1895	37	
Do	Sept. 7, 1895	Sept. 13, 1895	7	
Do	Sept. 13, 1895	Oct. 3, 1895	.....	
Do	Oct. 3, 1895	Oct. 9, 1895	50	
Do	Oct. 9, 1895	Oct. 22, 1895	50	
Tompkinsville, Staten Island	Oct. 23, 1895	Oct. 28, 1895	279	
Brooklyn, N. Y	Oct. 28, 1895	Dec. 3, 1895	6	
Tompkinsville, Staten Island	Dec. 3, 1895	Dec. 7, 1895	6	
Do	Dec. 7, 1895	Dec. 12, 1895	62	
Do	Dec. 12, 1895	Dec. 19, 1895	116	
Do	Dec. 19, 1895	Dec. 23, 1895	182	
Do	Dec. 23, 1895	.....	75	
Norfolk, Va	Aug. 25, 1896	Aug. 25, 1896	.....	Placed out of commission, Jan. 27, 1896.
Tompkinsville, N. Y	Aug. 26, 1896	Sept. 1, 1896	271	Commissioned July 20, 1896, Norfolk, Va.
Fishers Island, N. Y	Sept. 7, 1896	Sept. 16, 1896	7	Assigned to North Atlantic Station.
Newport, R. I	Sept. 17, 1896	Sept. 25, 1896	37	Squadron drill.
Tompkinsville, N. Y	Sept. 26, 1896	Oct. 1, 1896	131	
Fort Monroe, Va	Oct. 5, 1896	Oct. 12, 1896	266	
Tompkinsville, N. Y	Oct. 14, 1896	.....	266	
Total distance sailed	.....	.....	1,866	
Olympia, Capt. J. J. READ, commanding.				
Lahaina, Sandwich Islands	Sept. 6, 1895	Oct. 12, 1895	.....	Asiatic Station.
Honolulu, Hawaiian Islands	Oct. 13, 1895	Oct. 23, 1895	74	
Yokohama, Japan	Nov. 9, 1895	Dec. 10, 1895	3,400	
Yokosuka, Japan	Dec. 18, 1895	Dec. 30, 1895	12	
Yokohama, Japan	Dec. 30, 1895	Jan. 21, 1896	12	
Kobe, Japan	Jan. 22, 1896	Jan. 22, 1896	.....	
Nagasaki, Japan	Jan. 24, 1896	Mar. 3, 1896	935	
Woosung, China	Mar. 4, 1896	Mar. 9, 1896	461	
Do	Mar. 20, 1896	May 9, 1896	200	
Chefoo, China	May 12, 1896	May 20, 1896	448	Proceeded in squadron to Chefoo, falling out, going to Chemulpo.
Vladivostock, Siberia	May 23, 1896	June 2, 1896	1,100	
Yokohama, Japan	June 8, 1896	.....	450	Target practice on 13th.
Total distance sailed	.....	.....	7,092	

Vessels serving on stations and duties performed by each—Continued.

SECOND RATE.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Baltimore, Capt. B. F. DAY, commanding.				
			Knots.	
Yokohama, Japan	.....	Aug. 1, 1895	.....	Asiatic Station.
Bunga Nada, Inland Sea	Aug. 2, 1895	Aug. 3, 1895	428	
Inland Sea, Japan	Aug. 3, 1895	Aug. 4, 1895	150	
Sisiki Bay, Japan	Aug. 4, 1895	Aug. 5, 1895	115	
Nagasaki, Japan	Aug. 5, 1895	Aug. 12, 1895	120	
Chefoo, China	Aug. 14, 1895	Sept. 16, 1895	597	
Off Chefoo	Sept. 16, 1895	Sept. 17, 1895	15	
Do	Sept. 17, 1895	Sept. 19, 1895	43	Squadron evolutions.
Do	Sept. 19, 1895	Sept. 20, 1895	65	
Do	Sept. 20 1895	Oct. 1, 1895	70	
Nagasaki, Japan	Oct. 3, 1895	Oct. 18, 1895	597	
Woosung, China	Oct. 20, 1895	Nov. 11, 1895	454	
Yokohama, Japan	Nov. 15, 1895	Dec. 3, 1895	1,035	
Honolulu, Hawaiian Islands	Dec. 23, 1895	Jan. 10, 1896	3,400	
San Francisco, Cal	Jan. 18, 1896	Jan. 21, 1896	2,095	
Mare Island, Cal	Jan. 21, 1896	.....	28	Placed out of commission Feb. 17, 1896.
Total distance sailed	.....	.....	9,212	
Philadelphia, Capt. C. S. COTTON, commanding.				
Port Angeles, Wash	Oct. 2, 1895	Nov. 1, 1895	404	Pacific Station.
Esquimalt, British Columbia	Nov. 1, 1895	Nov. 9, 1895	19	
Port Townsend, Wash	Nov. 9, 1895	Nov. 12, 1895	36	
Everett, Wash	Nov. 12, 1895	Nov. 16, 1895	31	
Seattle, Wash	Nov. 16, 1895	Nov. 27, 1895	28	
Tacoma, Wash	Nov. 27, 1895	Dec. 5, 1895	30	
Olympia, Wash	Dec. 5, 1895	Dec. 9, 1895	35	
Tacoma, Wash	Dec. 9, 1895	Dec. 12, 1895	35	
Port Townsend, Wash	Dec. 12, 1895	Dec. 13, 1895	62	
New Whatcom, Wash	Dec. 13, 1895	Dec. 16, 1895	43	
Port Angeles, Wash	Dec. 16, 1895	Dec. 17, 1895	55	
San Francisco, Cal	Dec. 21, 1895	Jan. 11, 1896	954	
Santa Barbara, Cal	Jan. 12, 1896	Jan. 14, 1896	284	
Prisoner Harbor, California	Jan. 14, 1896	.....do.....	20	
Santa Barbara, Cal	.....do.....	Jan. 22, 1896	20	
Buena Ventura, Cal	Jan. 22, 1896	Jan. 23, 1896	21	
Santa Barbara, Cal	Jan. 23, 1896	Jan. 26, 1896	21	
Coronado Island, California	Jan. 27, 1896	Jan. 28, 1896	174	
San Diego, Cal	Jan. 28, 1896	Apr. 1, 1896	12	
Off Coronado Island	Apr. 1, 1896	Apr. 3, 1896	15	Target practice.
San Pedro, Cal	Apr. 4, 1896	Apr. 5, 1896	85	
Port Los Angeles, Cal	Apr. 5, 1896	.....do.....	27	Do.
Santa Barbara, Cal	.....do.....	Apr. 19, 1896	68	
Redondo Beach, Cal	Apr. 19, 1896	Apr. 20, 1896	76	
San Pedro, Cal	Apr. 20, 1896	Apr. 27, 1896	17	
Port Los Angeles, Cal	Apr. 27, 1896	Apr. 29, 1896	27	
Port Harford, Cal	Apr. 30, 1896	May 1, 1896	158	
Monterey, Cal	May 1, 1896	May 3, 1896	125	
San Francisco, Cal	May 4, 1896	May 5, 1896	105	
Mare Island, Cal	May 5, 1896	May 13, 1896	24	
San Francisco, Cal	May 13, 1896	June 15, 1896	24	Drill, Naval Militia.
Santa Cruz, Cal	June 15, 1896	.....	77	
Total distance sailed	.....	.....	3,112	
Monterey, Capt. T. F. KANE, commanding. Relieved by Capt. NICOLL LUDLOW, Feb. 26, 1896.				
Seattle, Wash	Nov. 16, 1894	Dec. 6, 1894	271	Pacific Station.
Tacoma, Wash	Dec. 6, 1894	Dec. 26, 1894	25	
Seattle, Wash	Dec. 26, 1894	Jan. 4, 1895	25	
Port Townsend, Wash	Jan. 4, 1895	Jan. 13, 1895	38	
Port Angeles, Cal	Jan. 13, 1895	Jan. 24, 1895	30	
New Whatcom, Wash	Jan. 24, 1895	Feb. 2, 1895	52	
San Francisco, Cal	Feb. 7, 1895	Feb. 8, 1895	733	
Mare Island, Cal	Feb. 8, 1895	Apr. 5, 1895	439	
San Diego, Cal	Apr. 8, 1895	Apr. 11, 1895	904	
Mazatlan, Mexico	Apr. 16, 1895	Apr. 18, 1895	587	
Acapulco, Mexico	Apr. 21, 1895	Apr. 28, 1895	1,478	
Panama, Colombia	May 6, 1895	May 11, 1895	1,362	
Callao, Peru	May 20, 1895	July 9, 1895	1,325	
Panama, Colombia	July 16, 1895	July 18, 1895	1,345	
Acapulco, Mexico	July 26, 1895	July 31, 1895	1,408	

Vessels serving on stations and duties performed by each—Continued.

SECOND RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Monterey, Capt. T. F. KANE, commanding, etc.—Continued.				
			Knots.	
San Diego, Cal.	Aug. 8, 1895	Aug. 15, 1895	91	Squadron drill.
Redondo Beach, Cal.	Aug. 16, 1895	Aug. 19, 1895	.....	
Port Los Angeles, Cal.	Aug. 19, 1895	Aug. 22, 1895	529	
Monterey, Cal.	Aug. 24, 1895	Aug. 29, 1895	81	
San Francisco, Cal.	Aug. 30, 1895	Aug. 31, 1895	.....	
Mare Island, Cal.	Aug. 31, 1895	Jan. 14, 1896	.....	
San Francisco, Cal.	Jan. 14, 1896	Feb. 5, 1896	25	
San Diego, Cal.	Feb. 7, 1896	Feb. 29, 1896	445	
Santa Barbara, Cal.	Mar. 1, 1896	Mar. 3, 1896	165	
San Francisco, Cal.	Mar. 5, 1896	Mar. 10, 1896	297	
Port Angeles, Cal.	Mar. 13, 1896	Mar. 16, 1896	781	Target practice.
Esquimalt, British Columbia.	Mar. 16, 1896	Mar. 23, 1896	13	
Seattle, Wash.	Mar. 24, 1896	Apr. 13, 1896	85	
Sidney, Wash.	Apr. 13, 1896	May 6, 1896	.....	
Seattle, Wash.	May 6, 1896	June 2, 1896	.....	
Sidney, Wash.	June 2, 1896	.....do.....	.....	
Seattle, Wash.	.....do.....	June 6, 1896	.....	
Tacoma, Wash.	June 6, 1896	Aug. 1, 1896	.....	
Port Angeles, Wash.	Aug. 1, 1896	Sept. 10, 1896	87	
Esquimalt, British Columbia.	Sept. 10, 1896	Sept. 12, 1896	18	
San Francisco, Cal.	Sept. 15, 1896	Sept. 17, 1896	763	
Mare Island, Cal.	Sept. 17, 1896	.....	28	
Total distance sailed.	.....	.....	13,195	
Newark, Capt. YATES STIRLING, commanding. Capt. N. H. FARQUHAR commanding after June 16, 1896.				
Montevideo, Uruguay	Mar. 22, 1895	July 14, 1895	58	South Atlantic Station.
Rio de Janeiro, Brazil.	July 19, 1895	July 27, 1895	1,039	
Cape Town, South Africa.	Aug. 12, 1895	Oct. 22, 1895	32	
Rio de Janeiro, Brazil.	Nov. 5, 1895	Nov. 16, 1895	3,447	Target practice.
Montevideo, Uruguay	Nov. 21, 1895	Mar. 28, 1896	1,022	
Bahia, Brazil	Apr. 6, 1896	Apr. 7, 1896	1,820	
Port Castrees, St. Lucia.	Apr. 17, 1896	Apr. 20, 1896	2,451	
Hampton Roads, Virginia.	Apr. 27, 1896	May 3, 1896	1,640	Assigned to North Atlantic Station.
Tompkinsville, Staten Island.	May 4, 1896	May 5, 1896	267	
Navy-yard, New York.	June 25, 1896	July 31, 1896	.....	
Tompkinsville, N. Y.	July 31, 1896	Aug. 1, 1896	5	
Hampton Roads, Virginia.	Aug. 9, 1896	Aug. 15, 1896	978	Squadron maneuvering.
Tompkinsville, N. Y.	Aug. 23, 1896	Sept. 1, 1896	802	
Key West, Fla.	Sept. 6, 1896	.....	1,240	
Total distance sailed.	.....	.....	14,765	
San Francisco, Capt. E. M. SHEPARD, commanding.				
Cronstadt, Russia.	July 5, 1895	July 11, 1895	789	European Station; target practice July 1.
Stockholm, Sweden.	July 13, 1895	July 19, 1895	387	
Christiania, Norway.	July 22, 1895	July 24, 1895	694	
Gravesend, England.	July 27, 1895	Aug. 20, 1895	657	Anchored for target practice.
Havre, France	Aug. 21, 1891	Sept. 9, 1895	190	
Southampton, England.	Sept. 10, 1895	Sept. 21, 1895	118	
Greenock, Scotland	Sept. 23, 1895	Oct. 4, 1895	571	
Lisbon, Portugal.	Oct. 8, 1895	Oct. 19, 1895	1,093	
Gibraltar, Spain	Oct. 20, 1895	Oct. 21, 1895	310	
Algiers, Algeria	Oct. 23, 1895	Nov. 7, 1895	420	
Marseilles, France	Nov. 9, 1895	Nov. 16, 1895	410	
Naples, Italy	Nov. 18, 1895	Nov. 19, 1895	456	
Mersyn, Asia Minor.	Nov. 24, 1895	Nov. 25, 1895	1,175	
Alexandretta, Syria.	Nov. 25, 1895	Dec. 4, 1895	80	
Beirut, Syria.	Dec. 5, 1895	Dec. 9, 1895	178	
Latakeyah, Syria	Dec. 10, 1895	Dec. 11, 1895	100	
Alexandretta, Syria.	Dec. 11, 1895	Dec. 14, 1895	80	Target practice.
Mersyn, Asia Minor.	Dec. 14, 1895	Dec. 17, 1895	80	
Smyrna, Turkey	Dec. 19, 1895	Mar. 23, 1896	621	
Salonica, Turkey.	Mar. 24, 1896	Mar. 28, 1896	258	
Parœus, Greece.	Mar. 29, 1896	Apr. 14, 1896	275	
Naples, Italy	Apr. 17, 1896	Apr. 27, 1896	673	

Vessels serving on stations and duties performed by each—Continued.

SECOND RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
San Francisco, Capt. E. M. SHEPARD, commanding—Continued.				
			Knots.	
Genoa, Italy	Apr. 23, 1896	May 25, 1896	355	Forced-draft trial.
Messina, Sicily	May 27, 1896	May 30, 1896	499	
Mersyn, Asia Minor	June 3, 1896	June 24, 1896	1,020	
Cape Karadash, Asia Minor	June 24, 1896	June 26, 1896	34	
Mersyn, Asia Minor	June 26, 1896	.....	34	Target practice.
Total distance sailed	.....	.....	11,557	
Charleston, Capt. G. W. COFFIN, commanding.				
Nagasaki, Japan	May 5, 1895	Mar. 12, 1896	565	Asiatic Station.
Chemulpo, Korea	Mar. 14, 1896	Mar. 18, 1896	490	Repairs at Nagasaki.
Chefoo, China	Mar. 20, 1896	Mar. 24, 1896	248	
Teng Chow Fu, China	Mar. 24, 1896	.....do.....	40	
Chefoo, China	.....do.....	Mar. 31, 1896	40	
Chemulpo, Korea	Apr. 1, 1896	May 12, 1896	278	
Chefoo, China	May 13, 1896	May 17, 1896	580	
Nagasaki, Japan	May 19, 1896	May 24, 1896	310	
Kobe, Japan	May 26, 1896	May 27, 1896	381	
Yokohama, Japan	May 28, 1896	June 6, 1896	3,398	
Honolulu, Sandwich Islands	June 18, 1896	June 23, 1896	2,073	
San Francisco, Cal	.....	.....	.....	Placed out of commission at Mare Island, Cal., July 27, 1896.
Total distance sailed	.....	.....	8,403	
Amphitrite, Capt. W. C. WISE, commanding.				
Norfolk, Va	.....	Nov. 20, 1895	.....	North Atlantic Station.
Annapolis, Md	Nov. 21, 1895	Dec. 2, 1895	118	
York River	Dec. 3, 1895	Dec. 4, 1895	88	
Lynn Haven Bay, Virginia	Dec. 4, 1895	Dec. 6, 1895	30	
Hampton Roads, Virginia	Dec. 6, 1895	Dec. 11, 1895	18	Target practice.
Norfolk, Va	Dec. 11, 1895	Dec. 13, 1895	8	
Do	Dec. 13, 1895	Dec. 31, 1895	2	
Hampton Roads, Virginia	Dec. 31, 1895	.....do.....	47	
Charleston, S. C	Jan. 3, 1896	Jan. 6, 1896	345	
Key West, Fla	Jan. 9, 1896	June 10, 1896	579	Militia drills.
Brunswick, Ga	June 13, 1896	June 17, 1896	540	
Savannah, Ga	June 18, 1896	June 21, 1896	90	
Southport, N. C	June 22, 1896	June 27, 1896	210	
Norfolk, Va	June 29, 1896	July 9, 1896	412	Instruct Naval Militia.
Tolchester Beach, Md	July 10, 1896	July 17, 1896	151	Squadron drill.
Tompkinsville, N. Y	July 19, 1896	Aug. 1, 1896	394	
Old Point Comfort, Va	Aug. 7, 1896	Aug. 8, 1896	465	
Lamberts Point, Va	Aug. 8, 1896	Aug. 12, 1896	8	
Old Point Comfort, Va	Aug. 12, 1896	Aug. 15, 1896	8	
Tompkinsville, N. Y	Aug. 17, 1896	Sept. 8, 1896	205	
Navy-yard, Brooklyn, N. Y	Sept. 3, 1896	.....	6	
Total distance sailed	.....	.....	3,784	
Monadnock, Capt. G. W. SUMNER, commanding.				
Mare Island, Cal	.....	Mar. 14, 1896	26	Pacific Station.
San Francisco, Cal	Mar. 14, 1896	.....do.....	198	
Monterey, Cal	Mar. 15, 1896	Mar. 16, 1896	270	
San Diego, Cal	Mar. 18, 1896	Apr. 4, 1896	462	
San Francisco, Cal	Apr. 7, 1896	Apr. 7, 1896	20	
Mare Island, Cal	.....do.....	May 16, 1896	28	
San Francisco, Cal	May 16, 1896	May 20, 1896	6	
Sausalito, Cal	May 20, 1896	May 31, 1896	6	Militia drills.
San Francisco, Cal	May 31, 1896	June 15, 1896	80	
Santa Cruz, Cal	June 15, 1896	June 30, 1896	20	
Monterey, Cal	July 1, 1896	July 7, 1896	73	
San Francisco, Cal	July 8, 1896	July 23, 1896	798	
Port Angeles, Wash	July 28, 1896	Sept. 22, 1896	17	Squadron drill.
Esquimalt, British Columbia	Sept. 22, 1896	Sept. 24, 1896	590	
Eureka, Cal	Sept. 27, 1896	Oct. 6, 1896	280	
Total distance sailed	.....	.....	2,874	

Vessels serving on stations and duties performed by each—Continued.

SECOND RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Terror, Capt. P. F. HARRINGTON, commanding.				
			Knots.	
Tompkinsville, N. Y	Aug. 24, 1896	Aug. 26, 1896	7	Commissioned Apr. 15, 1896.
Sandy Hook, N. Y	Aug. 26, 1896	Aug. 28, 1896	15	To test battery.
Tompkinsville, N. Y	Sept. 3, 1896	Sept. 4, 1896	15	
Navy-yard, New York	Sept. 4, 1896		7	
Total distance sailed			44	
Lancaster, Capt. W. B. HOFF, commanding. Relieved by Capt. YATES STIRLING Mar. 15, 1896.				
Newport, R. I	Oct. 24, 1895	Nov. 4, 1895	132	
Funchal, Madeira	Dec. 25, 1895	Dec. 31, 1895	5, 284	
Porto Grande, Cape Verde Islands	Jan. 8, 1896	Jan. 14, 1896	1, 054	
Montevideo, Uruguay	Feb. 12, 1896		3, 924	Assigned to South Atlantic Station.
Port of La Plata, Argentina	May 14, 1896	June 1, 1896	100	
Montevideo, Uruguay	June 2, 1896		100	To Chico Bank for target practice.
Total distance sailed			9, 549	
Cincinnati, Capt. M. L. JOHNSON, commanding.				
Tampa, Fla		Oct. 5, 1895		North Atlantic Station.
Key West, Fla	Oct. 6, 1895	Jan. 12, 1896	233	
Norfolk, Va	Jan. 16, 1896	Jan. 18, 1896	936	
New York, N. Y	Jan. 20, 1896	Jan. 22, 1896	293	
Fort Monroe, Va	Feb. 23, 1896	Mar. 2, 1896	281	
Newport News, Va	Mar. 2, 1896	Mar. 6, 1896	10	
Fort Monroe, Va	Mar. 6, 1896	Mar. 27, 1896	10	
Newport News, Va	Mar. 27, 1896	Mar. 29, 1896	10	
Fort Monroe, Va	Mar. 29, 1896	Apr. 14, 1896	10	
Norfolk, Va	Apr. 14, 1896	Apr. 22, 1896	12	
Hampton Roads, Virginia	Apr. 22, 1896	May 2, 1896	12	
New London, Conn	May 5, 1896	May 7, 1896	348	
Tompkinsville, Staten Island	May 8, 1896	May 25, 1896	155	
Drill Grounds	May 25, 1896	May 27, 1896	140	
Tompkinsville, Staten Island	May 27, 1896	May 30, 1896	140	
Riverside Park	May 30, 1896	do	9	
Tompkinsville, Staten Island	do	June 8, 1896	9	
Bridgeport, Conn	June 8, 1896	June 11, 1896	55	
Tompkinsville, Staten Island	June 11, 1896	June 16, 1896	55	
Navy-yard, New York	June 16, 1896	June 19, 1896	6	To be docked.
Tompkinsville, Staten Island	June 19, 1896	June 26, 1896	6	
Northern Drill Grounds	June 26, 1896	June 27, 1896	70	Target practice.
Tompkinsville, Staten Island	June 27, 1896			
New Haven, Conn	July 9, 1896	July 11, 1896	66	Militia drills.
Gardiners Bay	July 11, 1896	July 16, 1896	39	
New Haven, Conn	July 16, 1896	July 17, 1896	39	
Tompkinsville, Staten Island	July 17, 1896	July 21, 1896	66	
Navy-yard, New York	July 21, 1896	July 25, 1896	7	
Tompkinsville, Staten Island	July 25, 1896	Aug. 1, 1896	7	
Hampton Roads, Virginia	Aug. 9, 1896	Aug. 10, 1896	1, 027	Cruising with squadron.
Lamberts Point, Va	Aug. 10, 1896	Aug. 13, 1896	6	
Hampton Roads, Virginia	Aug. 13, 1896	Aug. 15, 1896	6	
Tompkinsville, Staten Island	Aug. 23, 1896	Sept. 17, 1896	965	
St. Michael, Azores	Sept. 27, 1896	Sept. 28, 1896	2, 296	Detached from North Atlantic Station and assigned to European Station.
Lat. 37, 10 N., long. 17 W	Sept. 30, 1896		410	
Total distance sailed			7, 734	
Raleigh, Capt. MERRILL MILLER, commanding.				
Lynn Haven Roads, Virginia		Oct. 1, 1895		North Atlantic Station; speed trial.
Do	Oct. 3, 1895	Oct. 4, 1895	353	
Hampton Roads, Virginia	Oct. 4, 1895	Oct. 18, 1895	17	
Newport News, Va	Oct. 18, 1895	Oct. 21, 1895	10	
Cape Henry, Virginia	Oct. 21, 1895	Oct. 23, 1895	41	Target practice.
Norfolk, Va	Oct. 26, 1895	Dec. 20, 1895	469	
Hampton Roads, Virginia	Dec. 20, 1895	Jan. 1, 1896	12	

Vessels serving on stations and duties performed by each—Continued.

SECOND RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Raleigh, Capt. MERRILL MILLER, commanding—Continued.				
			Knots.	
Newport News, Va	Jan. 1, 1896	Jan. 4, 1896	11	Drill with Maine.
Hampton Roads, Virginia	Jan. 4, 1896	Jan. 9, 1896	11	
Newport News, Va	Jan. 10, 1896	Jan. 11, 1896	167	
Hampton Roads, Virginia	Jan. 11, 1896	Jan. 27, 1896	11	Intercept J. W. Hawkins, filibustering vessel.
Key West, Fla	Feb. 1, 1896	Feb. 6, 1896	1,513	
Newport News, Va	Feb. 9, 1896	Feb. 11, 1896	1,006	
Norfolk, Va	Feb. 11, 1896	Mar. 14, 1896	18	
Newport News, Va	Mar. 14, 1896	Mar. 17, 1896	18	
Hampton Roads, Virginia	Mar. 17, 1896	Mar. 25, 1896	11	Full-power trial.
Do	Mar. 26, 1896	Mar. 27, 1896	247	
Newport News, Va	Mar. 27, 1896	Mar. 31, 1896	11	
Hampton Roads, Virginia	Mar. 31, 1896	Apr. 18, 1896	11	
Norfolk, Va	Apr. 18, 1896	Apr. 25, 1896	12	
Hampton Roads, Virginia	Apr. 25, 1896	May 6, 1896	12	
Tompkinsville, Staten Island	May 7, 1896	May 25, 1896	305	To sea for exercise.
Do	May 27, 1896	May 30, 1896	187	
North River	May 30, 1896	....do....	8	Militia drills.
Tompkinsville, Staten Island	....do....	June 8, 1896	8	
Charleston, S. C	June 11, 1896	June 18, 1896	711	
Port Royal, S. C	June 19, 1896	June 21, 1896	77	
South Pass	June 25, 1896	June 30, 1896	1,172	
New Orleans, La	June 30, 1896	July 3, 1896	114	
Philadelphia, Pa	July 10, 1896	July 20, 1896	1,587	
Tompkinsville, N. Y	July 21, 1896	July 23, 1896	269	
Navy-yard, Brooklyn	July 23, 1896	Aug. 14, 1896	7	
Hampton Roads, Virginia	Aug. 15, 1896	Aug. 15, 1896	304	Squadron drill.
Off Cape Henry, Virginia	....do....	Aug. 16, 1896	31	
Tompkinsville, N. Y	Aug. 22, 1896	Sept. 1, 1896	985	
Fishers Island, N. Y	Sept. 4, 1896	Sept. 16, 1896	415	
Tompkinsville, N. Y	Sept. 18, 1896	.....	416	
Total distance sailed	.....	.....	10,560	
Boston, Capt. FRANK WILDES, commanding.				
San Francisco, Cal	Jan. 7, 1896	Jan. 19, 1896	2,093	Commissioned Nov. 15, 1895.
Honolulu, Hawaii	Jan. 30, 1896	Feb. 7, 1896	3,556	Assigned to Asiatic Station Dec. 24, 1895.
Yokohama, Japan	Feb. 25, 1896	Mar. 4, 1896	346	
Kobe, Japan	Mar. 6, 1896	Mar. 7, 1896	411	Target practice.
Nagasaki, Japan	Mar. 9, 1896	Apr. 15, 1896	.....	
Elliot Islands	Apr. 17, 1896	Apr. 19, 1896	372	
Woosung, China	Apr. 20, 1896	May 3, 1896	78	
Shanghai, China	May 3, 1896	May 27, 1896	17	Do.
Chin Keang, China	May 28, 1896	June 8, 1896	1,510	Do.
Elliot Islands	June 9, 1896	June 11, 1896	1,020	Do.
Gutslaff Islands	June 11, 1896	....do....	10	
Elliot Islands	....do....	June 15, 1896	10	
Woosung, China	June 15, 1896	June 16, 1896	52	
Shanghai, China	June 16, 1896	.....	14	Headquarters at Shanghai.
Total distance sailed	.....	.....	10 489	

THIRD RATE.

Katahdin, Commander R. P. LEARY, commanding.				
New York, N. Y	.....	.....	.....	Commissioned Feb. 20, 1896.
Detroit, Commander J. S. NEWELL, commanding.				
Shanghai, China	June 25, 1895	July 23, 1895	227	Asiatic Station.
Chinkiang, China	July 24, 1895	July 26, 1895	112	
Wuhu, China	July 26, 1895	July 27, 1895	301	
Kinkiang, China	July 29, 1895	July 31, 1895	187	
Hankow, China	July 31, 1895	Aug. 1, 1895	421	
Shanghai, China	Aug. 4, 1895	Aug. 10, 1895	451	
Foochow, China	Aug. 12, 1895	Oct. 31, 1895	420	
Harlem Bay	Nov. 1, 1895	Nov. 2, 1895	46	
Hongkong, China	Nov. 2, 1895	Jan. 17, 1896	205	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Detroit, Commander J. S. NEWELL, commanding—Continued.				
			Knots.	
Swatow, China	Jan. 18, 1896	Jan. 20, 1896	341	
Foochow, China	Jan. 22, 1896	Jan. 26, 1896	778	
Nagasaki, Japan	Jan. 30, 1896	Feb. 19, 1896	472	
Shanghai, China	Feb. 20, 1896	Mar. 24, 1896	70	
Off North Saddle Island	Mar. 24, 1896	Mar. 25, 1896	23	
South Bay, Saddle Island	Mar. 25, 1896	Mar. 28, 1896	55	
Woosung, China	Apr. 1, 1896	Apr. 6, 1896	9	
Langshang Crossing	Apr. 6, 1896	Apr. 7, 1896	42	
Off Rose Island	Apr. 7, 1896	Apr. 8, 1896	86	
Chinkiang, China	Apr. 8, 1896	Apr. 9, 1896	14	
Wuhu, China	Apr. 9, 1896	Apr. 11, 1896	95	
Matung Cut-Off	Apr. 11, 1896	Apr. 12, 1896	144	
Kiukiang, China	Apr. 12, 1896	Apr. 13, 1896	49	
Hankow, China	Apr. 13, 1896	Apr. 16, 1896	140	
Kiukiang, China	Apr. 16, 1896	Apr. 17, 1896	140	
Wuhu, China	Apr. 17, 1896	Apr. 19, 1896	193	
Nanking, China	Apr. 19, 1896	Apr. 20, 1896	50	
Chinkiang, China	Apr. 20, 1896	Apr. 23, 1896	45	
Woosung, China	Apr. 23, 1896	May 9, 1896	142	
Chefoo, China	May 11, 1896	May 20, 1896	476	
Off Hino Shima Island	May 22, 1896	May 23, 1896	646	
Kobe, Japan	May 23, 1896	May 24, 1896	200	
Yokohama, Japan	May 25, 1896	.....	350	
Total distance sailed	.....	.....	6,932	
Montgomery, Commander C. H. DAVIS, commanding. Relieved by Commander R. B. BRADFORD, July 1, 1896.				
Key West, Fla	July 14, 1895	July 17, 1895	1,188	North Atlantic Station.
New York, N. Y	July 21, 1895	Aug. 7, 1895	1,001	
Newport, R. I	Aug. 8, 1895	Aug. 15, 1895	148	
Bar Harbor, Me	Aug. 17, 1895	Aug. 22, 1895	409	
Cape Cod Bay, Mass	Aug. 24, 1895	Aug. 25, 1895	377	
Portland, Me	Aug. 26, 1895	Aug. 29, 1895	153	
Boston, Mass	Aug. 30, 1895	Sept. 5, 1895	97	
Fishers Island	Sept. 7, 1895	Sept. 15, 1895	354	
Tompkinsville, Staten Island	Sept. 16, 1895	Sept. 23, 1895	124	
Lynn Haven Bay, Virginia	Sept. 28, 1895	Oct. 1, 1895	838	
Do	Oct. 3, 1895	Oct. 5, 1895	.....	
Norfolk, Va	Oct. 5, 1895	Oct. 18, 1895	.....	
Newport News, Va	Oct. 18, 1895	Oct. 21, 1895	.....	
Cape Henry, Virginia	Oct. 21, 1895	Oct. 23, 1895	444	
Old Point, Va	Oct. 26, 1895	Oct. 30, 1895	.....	
Norfolk, Va	Oct. 30, 1895	Dec. 19, 1895	.....	
Old Point, Va	Dec. 19, 1895	.....	.....	
Newport News, Va	Jan. 1, 1896	Jan. 4, 1896	.....	
Hampton Roads, Virginia	Jan. 4, 1896	Jan. 24, 1896	10	In search of Steamer J. W. Hawkins.
Newport News, Va	Jan. 24, 1896	Jan. 26, 1896	10	
Hampton Roads, Virginia	Jan. 26, 1896	.....do.....	10	
Charleston, S. C	Feb. 2, 1896	Feb 5, 1896	.....	
Hampton Roads, Virginia	Feb. 8, 1896	Feb. 8, 1896	349	
Newport News, Va	.....do.....	Feb. 12, 1896	10	Target practice.
Norfolk, Va	Feb. 12, 1896	Feb. 19, 1896	13	
Hampton Roads, Virginia	Feb. 19, 1896	Mar 2, 1896	12	
Newport News, Va	Mar. 2, 1896	Mar. 6, 1896	10	
Hampton Roads, Virginia	Mar. 6, 1896	Mar. 17, 1896	10	
Lynn Haven Bay, Virginia	Mar. 18, 1896	Mar. 19, 1896	15	
Hampton Roads, Virginia	Mar. 19, 1896	Mar. 26, 1896	15	
Newport News, Va	Mar. 26, 1896	Mar. 28, 1896	10	
Hampton Roads, Virginia	Mar. 28, 1896	Apr. 1, 1896	.....	
Fort Monroe, Va	Apr. 1, 1896	Apr. 12, 1896	.....	
Norfolk, Va	Apr. 12, 1896	Apr. 18, 1896	14	
Fort Monroe, Va	Apr. 18, 1896	May 2, 1896	14	
New London, Conn	May 5, 1896	May 7, 1896	275	
Tompkinsville, Staten Island	May 9, 1896	May 25, 1896	160	
At sea	May 25, 1896	May 26, 1896	56	
Tompkinsville, Staten Island	May 27, 1896	June 10, 1896	56	
Navy-yard, New York	June 10, 1896	June 16, 1896	7	
Tompkinsville, Staten Island	June 16, 1896	June 26, 1896	7	
At sea	June 26, 1896	June 27, 1896	83	Target practice.
Tompkinsville, Staten Island	June 27, 1896	.....	33	Cruising report for Sept. 30, 1896, not received.
Total distance sailed	.....	.....	6,262	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Marblehead, Commander CHAS. O'NEIL, commanding. Relieved by Commander T. F. JEWELL Mar. 12, 1896.				
			Knots.	
St. Petersburg, Russia	July 1, 1895	July 9, 1895	20	European Station.
Stockholm, Sweden	July 10, 1895	July 17, 1895	395	
Copenhagen, Denmark	July 19, 1895	July 26, 1895	454	
Christiania, Norway	July 27, 1895	Aug. 2, 1895	275	
Gravesend, England	Aug. 5, 1895	Aug. 16, 1895	680	
Gibraltar, Spain	Aug. 21, 1895	Aug. 22, 1895	1,346	
Algiers, Algeria	Aug. 24, 1895	Aug. 28, 1895	425	Lookout for American interests and missionaries, etc.
Spezia, Italy	Aug. 30, 1895	Sept. 12, 1895	553	
Marseilles, France	Sept. 13, 1895	Sept. 20, 1895	225	
Villefranche, France	Sept. 21, 1895	Oct. 10, 1895	135	
Naples, Italy	Oct. 12, 1895	Oct. 15, 1895	380	
Mersina, Syria	Oct. 20, 1895	Nov. 10, 1895	1,204	
Alexandretta, Syria	Nov. 11, 1895	Nov. 11, 1895	80	
Mersina, Syria	Nov. 12, 1895	Nov. 17, 1895	84	
Alexandretta, Syria	Nov. 18, 1895	Nov. 20, 1895	84	
Mersina, Syria	Nov. 21, 1895	Jan. 24, 1896	84	
Smyrna, Turkey	Jan. 26, 1896	Feb. 18, 1896	628	
Saida, Syria	Feb. 21, 1896	Feb. 21, 1896	662	
Beirut, Syria	.....do.....	Feb. 25, 1896	24	
Tripoli, Tripoli	Feb. 26, 1896	Feb. 28, 1896	45	
Latakiyah, Syria	Feb. 28, 1896	Feb. 29, 1896	65	
Orontes River	Feb. 29, 1896	.....do.....	38	
Alexandretta, Syria	.....do.....	.....do.....	48	
Mersina, Syria	Mar. 1, 1896	Mar. 19, 1896	84	
Alexandretta, Syria	Mar. 19, 1896	Mar. 21, 1896	82	
Mersina, Syria	Mar. 21, 1896	Apr. 23, 1896	78	
Suidia, Syria	Apr. 24, 1896	Apr. 25, 1896	81	
Mersina, Syria	Apr. 26, 1896	Apr. 26, 1896	78	
Alexandretta, Syria	Apr. 27, 1896	Apr. 28, 1896	87	
Mersina, Syria	Apr. 29, 1896	June 6, 1896	86	
Corfu, Greece	June 10, 1896	June 17, 1896	966	
Venice, Italy	June 19, 1896	.....	490	Target practice and to dock.
Total distance sailed	.....	.....	9,766	
Marion, Commander D. L. MULLAN, commanding. Relieved by Commander J. G. GREENE Apr. 23, 1896.				
San Francisco, Cal	.....	Oct. 12, 1895	.....	Pacific Station.
San Diego, Cal	Oct. 16, 1895	Oct. 27, 1895	608	
Acapulco, Mexico	Nov. 5, 1895	Nov. 14, 1895	1,430	
Corinto, Nicaragua	Nov. 20, 1895	Nov. 20, 1895	859	
Punta Arenas, Costa Rico	Nov. 22, 1895	Nov. 22, 1895	256	
Panama, Colombia	Nov. 25, 1895	Dec. 3, 1895	469	
Callao, Peru	Dec. 4, 1895	Feb. 19, 1896	1,380	
Anca, Chile	Feb. 23, 1896	Feb. 26, 1896	598	
Iquique, Chile	Feb. 27, 1896	Mar. 1, 1896	100	
Port Flamenco, Chile	Mar. 3, 1896	Mar. 4, 1896	319	
Caldera, Chile	Mar. 4, 1896	Mar. 6, 1896	28	
Coquimbo, Chile	Mar. 7, 1896	Mar. 11, 1896	173	
Valparaiso, Chile	Mar. 12, 1896	Mar. 29, 1896	210	
Talcahuano, Chile	Mar. 31, 1896	Apr. 6, 1896	250	
Payta, Peru	Apr. 22, 1896	.....	2,063	
Total distance sailed	.....	.....	8,743	
Bennington, Commander G. W. PIGMAN, commanding.				
Honolulu, Sandwich Islands	June 5, 1895	Sept. 7, 1895	2,104	Pacific Station.
Lahaina, Sandwich Islands	Sept. 8, 1895	Oct. 1, 1895	77	
Honolulu, Sandwich Islands	Oct. 2, 1895	Oct. 5, 1895	73	
Hilo, Sandwich Islands	Oct. 6, 1895	Oct. 14, 1895	182	
Honolulu, Sandwich Islands	Oct. 15, 1895	Oct. 18, 1895	194	
Hanalei, Sandwich Islands	Oct. 19, 1895	Oct. 20, 1895	110	
Honolulu, Sandwich Islands	Oct. 21, 1895	Oct. 31, 1895	124	
Hilo, Sandwich Islands	Nov. 1, 1895	Nov. 12, 1895	202	
Honolulu, Sandwich Islands	Nov. 13, 1895	Feb. 19, 1896	201	Target practice.
Lahaina, Sandwich Islands	Feb. 19, 1896	Feb. 21, 1896	68	
Honolulu, Sandwich Islands	Feb. 21, 1896	Mar. 5, 1896	77	
San Francisco, Cal	Mar. 16, 1896	Mar. 17, 1896	2,093	
Mare Island, Cal	Mar. 17, 1896	.....	20	
Total distance sailed	.....	.....	5,525	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Concord, Commander J. E. CRAIG, commander.				
			Knots.	
Chemulpo, Korea		Aug. 26, 1895		Asiatic Station.
Chefoo, China	Aug. 28, 1895	Sept. 2, 1895	291	
Lat. 37° 44′ N., long. 121° 08′ E.	Sept. 2, 1895	Sept. 3, 1895	79	
Lat. 37° 47′ N., long. 121° 02′ E.	Sept. 3, 1895	Sept. 4, 1895	47	
Lat. 37° 52′ N., long. 120° 55′ E.	Sept. 4, 1895	Sept. 5, 1895	83	
Tung Chow Fu, China	Sept. 5, 1895	Sept. 6, 1895	8	
Lat. 37° 54′ N., long. 120° 43′ E.	Sept. 6, 1895	Sept. 9, 1895	3	
Chang Shan Island				Target practice en route.
Tung Chow Fu, China	Sept. 9, 1895	Sept. 10, 1895	3	
Lat. 37° 45′ N., long. 121° 07′ E.	Sept. 10, 1895	Sept. 11, 1895	111	
Chefoo, China	Sept. 11, 1895	Sept. 16, 1895	43	
Lat. 37° 43′ N., long. 121° 37′ E.	Sept. 16, 1895	Sept. 17, 1895	18	
Chefoo, China	Sept. 17, 1895	Sept. 19, 1895	52	
Do	Sept. 19, 1895	Sept. 20, 1895	61	
Do	Sept. 20, 1895	Oct. 1, 1895	111	
Shanghai, China	Oct. 3, 1895	Nov. 2, 1895	589	
Woosung, China	Nov. 2, 1895	Nov. 6, 1895	14	
Elliot Island, Off	Nov. 6, 1895	Nov. 7, 1895	68	
Fuchan, China	Nov. 8, 1895	Feb. 2, 1896	369	
Nagasaki, Japan	Feb. 6, 1896	Feb. 20, 1896	710	
Kobe, Japan	Feb. 24, 1896	Feb. 25, 1896	390	
Yokohama, Japan	Feb. 26, 1896	Mar. 30, 1896	375	
Honolulu, Sandwich Islands	Apr. 16, 1896	Apr. 23, 1896	3,329	
San Francisco, Cal	May 3, 1896	May 8, 1896	2,025	
Mare Island, Cal	May 8, 1896		25	Placed out of commission May 27, 1896.
Total distance sailed			8,813	
Yorktown, Commander W. M. FOLGER, commanding. Relieved by Commander C. H. STOCKTON Oct. 22, 1895.				
Nagasaki, Japan	May 21, 1895	July 10, 1895	464	Asiatic Station.
Shanghai, China	July 12, 1895	Aug. 24, 1895	527	
Chefoo, China	Aug. 26, 1895	Sept. 2, 1895	130	
Do	Sept. 3, 1895	Sept. 16, 1895		
Do	Sept. 20, 1895	Oct. 1, 1895	281	
Chemulpo, Korea	Oct. 2, 1895	Dec. 4, 1895	519	
Shanghai, China	Dec. 7, 1895	Jan. 23, 1896		
Nagasaki, Japan	Jan. 24, 1896	Feb. 26, 1896	448	
Bullock Harbor	Feb. 28, 1896	Feb. 29, 1896	544	
Pagoda Anchorage	Mar. 1, 1896	Mar. 13, 1896	244	Target practice.
Amoy, China	Mar. 14, 1896	Apr. 15, 1896	210	
Swatow, China	Apr. 16, 1896	Apr. 20, 1896	158	
Woosung, China	Apr. 23, 1896	May 9, 1896	665	
Chemulpo, Korea	May 11, 1896		520	Parted from squadron May 10.
Total distance sailed			4,710	
Dolphin, Commander W. T. BURWELL, commanding. Relieved by Lieut. Commander RICHARDSON CLOVER, Apr. 30, 1896.				
Portland, Me	Oct. 5, 1895	Oct. 6, 1895		Trials of Katahdin, Indiana, and St. Paul.
Goat Island, Maine	Oct. 6, 1895	Oct. 8, 1895	57	
Portland, Me	Oct. 8, 1895	Oct. 9, 1895	57	
Goat Island, Maine	Oct. 9, 1895	Oct. 10, 1895	57	
Portland, Me	Oct. 10, 1895	Oct. 11, 1895	57	
Boston, Mass	Oct. 11, 1895	Oct. 16, 1895	80	
Gloucester, Mass	Oct. 16, 1895	Oct. 18, 1895	63	
Boston, Mass	Oct. 18, 1895	Oct. 24, 1895	63	
New London, Conn	Oct. 24, 1895	Oct. 31, 1895	175	
Do	Oct. 31, 1895	Nov. 4, 1895	50	
Newport, R. I	Nov. 4, 1895	Nov. 5, 1895	67	
Nantucket, Mass	Nov. 5, 1895	Nov. 8, 1895		To destroy wrecks.
Providence, Mass	Nov. 8, 1895	Nov. 10, 1895	78	
New York, N. Y	Nov. 11, 1895	Nov. 16, 1895	249	
Delaware Breakwater	Nov. 17, 1895	Nov. 18, 1895	117	
Do	Nov. 18, 1895	Nov. 19, 1895	50	
Hog Island, Virginia	Nov. 19, 1895	Nov. 20, 1895	93	
Norfolk, Va	Nov. 20, 1895	Dec. 21, 1895	63	
Key West, Fla	Dec. 24, 1895	Dec. 30, 1895	1,004	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Dolphin, Commander W. T. BURWELL, commanding, etc.—Con.				
			Knots.	
Livingston, Guatemala	Jan. 2, 1896	Jan. 6, 1896	560	
Memgrave Point, Guatemala	Jan. 6, 1896	Jan. 27, 1896	9	
Santa Maria, Honduras Bay	Jan. 27, 1896	Jan. 30, 1896	5	
Puerto Barrios, Guatemala	Jan. 30, 1896	Feb 12, 1896	3	
Do	Feb. 12, 1896	Feb. 13, 1896	1	
Memgrave Point, Guatemala	Feb. 13, 1896	Feb. 20, 1896	7	
Livingston, Guatemala	Feb. 20, 1896	Feb. 24, 1896	9	
Puerto Barrios, Guatemala	Feb. 24, 1896	Mar. 1, 1896	11	
Puerto Cortes, Honduras	Mar. 1, 1896	Mar. 2, 1896	65	
Chimlico Peak	Mar. 2, 1896	....do	20	
Livingston, Guatemala	Mar. 3, 1896	Mar. 3, 1896	58	
Puerto Barrios, Guatemala	....do	Mar. 4, 1896	40	
Do	Mar. 4, 1896	Mar. 5, 1896	11	
Puerto Cortes, Honduras	Mar. 5, 1896	Mar. 9, 1896	54	
Do	Mar. 9, 1896	....do	55	
Do	....do	....do	55	
Do	....do	Mar. 14, 1896	5	
Puerto Barrios, Guatemala	Mar. 14, 1896	Mar. 16, 1896	65	
Livingston, Guatemala	Mar. 16, 1896	Mar. 17, 1896	11	
Tampico, Mexico	Mar. 22, 1896	Mar. 26, 1896	964	
St. Cecilia, Mexico	Mar. 26, 1896	Mar. 30, 1896	3	
Key West, Fla	Apr. 3, 1896	Apr. 7, 1896	720	
Norfolk, Va	Apr. 11, 1896	May 23, 1896	950	
Washington, D. C	May 24, 1896	Juue 4, 1896	170	
Annapolis, Md	June 5, 1896	June 6, 1896	155	
Washington, D. C	June 7, 1896	June 22, 1896	155	
Philadelphia, Pa	June 23, 1896	June 24, 1896	375	
New York, N. Y	June 26, 1896	June 30, 1896	240	
Hortons Point, Long Island	June 30, 1896	July 1, 1896	85	
Greenport, Long Island	July 1, 1896	July 6, 1896	23	
Gardiners Island, New York	July 6, 1896	July 7, 1896	10	
Newport, R. I	July 7, 1896	July 11, 1896	50	
Gardiners Bay, New York	July 11, 1896	July 16, 1896	53	
Newport, R. I	July 16, 1896	July 20, 1896	53	
Gloucester, Mass	July 20, 1896	July 26, 1896	155	
Boston, Mass	July 26, 1896	Aug. 1, 1896	26	
Alexandria, Va	Aug. 3, 1896	Aug. 5 1896	655	
Newport, R. I	Aug. 7, 1896	Aug. 8, 1896	515	
Narragansett Pier	Aug. 8, 1896	....do	22	
Newport, R. I	....do	Aug. 11, 1896	10	
New York, N. Y	Aug. 11, 1896	Aug. 15, 1896	145	
Newport, R. I	Aug. 16, 1896	Aug. 25, 1896	170	
New York, N. Y	Aug. 26, 1896	Aug. 28, 1896	170	
Clifton, N. Y	Aug. 28, 1896	....do	11	
New York, N. Y	....do	Aug. 31, 1896	11	
West Point, N. Y	Aug. 31, 1896	....do	49	
New York, N. Y	....do	Sept. 10, 1896	43	
Newport R. I	Sept. 10, 1896	Sept. 14, 1896	145	
Gardiners Bay, New York	Sept. 14, 1896	Sept. 15, 1896	53	
Plum Island, New York	Sept. 15, 1896	....do	10	
Tarpaulin Cove	....do	Sept. 16, 1896	70	
Gay Head, Mass	Sept. 16, 1896	Sept. 17, 1896	10	
Newport, R. I	Sept. 17, 1896	Sept. 18, 1896	32	
New York, N. Y	Sept. 18, 1896	Sept. 21, 1896	167	
Tower Bar, New York	Sept. 21, 1896	....do	18	
Tompkinsville, N. Y	....do	....do	9	
New York, N. Y	....do	Sept. 22, 1896	10	
Newport, R. I	Sept. 22, 1896	Sept. 23, 1896	167	
Buzzards Bay, Mass	Sept. 23, 1896	....do	36	
Newport, R. I	....do	Sept. 24, 1896	36	
West Island, Rhode Island	Sept. 24, 1896	....do	13	
Newport, R. I	....do		13	
Total distance sailed			10,201	
Adams, Commander E. W. WATSON, commanding.				
Mare Island, Cal		Jan. 18, 1896		Pacific Station.
San Francisco, Cal	Jan. 18, 1896	Feb. 18, 1896	27	Commissioned Dec. 24, 1895.
Honolulu, Sandwich Islands	Mar. 1, 1896	June 5, 1896	2,137	
Lahaina, Sandwich Islands	June 5, 1896	June 12, 1866	76	Target practice.
Honolulu, Sandwich Islands	June 12, 1896		78	
Total distance sailed			2,318	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Alliance, Commander JOHN MCGOWAN, commanding. Relieved by Commander H. N. MANNING, Oct. 10, 1896.			*Knots.*	
New York, N. Y.	Sept. 27, 1895	Nov. 27, 1895	276	Apprentice training ship.
Newport, R. I.	Nov. 28, 1895	Dec. 7, 1895	140	
Bridgetown, Barbados	Jan. 1, 1896	Jan. 16, 1896	2,276	
Basseterre, St. Christopher	Jan. 18, 1896	Feb. 4, 1896	33	
St. Thomas	Feb. 6, 1896	Feb. 19, 1896	296	
Frederickstad, Santa Cruz	Feb. 20, 1896	Feb. 26, 1896	121	
Kingston, Jamaica	Mar. 8, 1896	Mar. 14, 1896	37	
Key West, Fla.	Apr. 1, 1896	Apr. 25, 1896	115	Target practice Apr. 6 to 8.
Newport, Va.	May 11, 1896	June 1, 1896	1,018	
Norfolk, Va.	June 1, 1896	June 3, 1896	11	
New York, N. Y.	June 5, 1896	June 30, 1896	265	
Total distance sailed			4,588	
Essex, Commander LOUIS KINGSLEY, commanding. Relieved by Commander E. T. STRONG Jan. 21, 1896.				
Lisbon, Portugal	Oct. 19, 1895	Oct. 27, 1895	1,341	Apprentice training ship.
Funchal, Madeira	Oct. 31, 1895	Nov. 6, 1895	504	
St. Thomas	Nov. 28, 1895	Dec. 12, 1895	2,930	
At sea			1,745	
Yorktown, Va.	Jan. 1, 1896	Jan. 6, 1896	138	
Annapolis, Md	Jan. 7, 1896	Feb. 7, 1896	113	
New York, N. Y.	Feb. 10, 1896	Mar. 9, 1896	460	
Hampton Roads, Virginia	Mar. 11, 1896	Mar. 13, 1896	290	
Norfolk, Va.	Mar. 13, 1896	Mar. 14, 1896	17	
New York, N. Y.	Mar. 16, 1896	Mar. 26, 1896	271	
Newport, R. I.	Mar. 27, 1896	Apr. 7, 1896	129	
Southampton, England	May 10, 1896	May 25, 1896	3,533	
Havre, France	May 26, 1896	June 12, 1896	89	
Lisbon, Portugal	June 23, 1896	July 3, 1896	1,038	
Funchal, Madeira	July 9, 1896	July 29, 1896	547	
Sag Harbor, Long Island	Sept. 13, 1896	Sept. 25, 1896	3,643	
Gardiners Bay, Long Island	Sept. 25, 1896	.....do.....	15	
New York	Sept. 30, 1896		100	
Total distance sailed			16,903	
Monocacy, Commander R. E. IMPEY, commanding. Relieved by Commander W. W. REISINGER Nov. 17, 1895.				
Shanghai, China		Oct. 31, 1895		
Chefoo, China	Nov. 6, 1895	Nov. 8, 1895	458	Asiatic Station.
Tientsin, China	Nov. 9, 1895			Moored at Tientsin, China, during second quarter, 1895.
Total distance sailed			458	
Thetis, Lieut. Commander HARRY KNOX, commanding. Relieved by Lieut. Commander URIEL SEBREE, Aug. 5, 1896.				
San Diego, Cal.	Sept. 28, 1895	Oct. 5, 1895		Carry on survey of coast of Lower California.
Magdalena Bay, Lower California.	Oct. 8, 1895		573	
Do		Dec. 11, 1895	1,627	
San Diego, Cal.	Dec. 15, 1895	Jan. 2, 1896	587	
Todas Santos	Jan. 7, 1896		734	
Magdalena Bay, Lower California.		Feb. 22, 1896	1,083	
San Diego, Cal.	Feb. 26, 1896	Mar. 14, 1896	632	
Cape Tosco	Mar. 17, 1896		598	
Magdalena Bay		Mar. 29, 1896	306	
San Diego, Cal.	Apr. 2, 1896	Apr. 8, 1896	655	
San Francisco, Cal.	Apr. 13, 1896	Apr. 20, 1896	533	
Mare Island, Cal.	Apr. 20, 1896	Sept. 1, 1896	33	
Pinoh Point	Sept. 1, 1896	.....do.....	5	
Mare Island, Cal.	.....do.....	Sept. 17, 1896	5	
San Francisco, Cal.	Sept. 17, 1896	Sept. 29, 1896	24	
Lat. 34° 19′ N., long. 120° 30′ W.			231	
Total distance sailed			7,626	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Castine, Commander THOMAS PERRY, commanding.				
			Knots.	
Cape Town	July 2, 1895	Sept. 28, 1895	328	South Atlantic Station.
Jamestown, St. Helena Island	Sept. 30, 1895	Oct. 5, 1895	1,710	
Pernambuco, Brazil	Oct. 13, 1895	Oct. 18, 1895	1,787	
Bahai, Brazil	Oct. 20, 1895	Oct. 26, 1895	412	
Rio de Janeiro, Brazil	Oct. 29, 1895	Nov. 5, 1895	792	
Santa Catharina, Brazil	Nov. 7, 1895	Nov. 9, 1895	425	
Montevideo, Uruguay	Nov. 12, 1895	Dec. 16, 1895	682	
India Point, La Plata River	Dec. 16, 1895	Dec. 23, 1895	52	
Montevideo, Uruguay	Dec. 23, 1895	Feb. 10, 1896	44	
Punta, Indio	Feb. 10, 1896	Feb. 15, 1896	56	
Montevideo, Uruguay	Feb. 15, 1896	May 5, 1896	41	
Buenos Ayres, Brazil	May 12, 1896	June 23, 1896	67	
Colonia	June 24, 1896	.....	.....	
Total distance sailed	.....	.....	6,396	
Machias, Commander E. S. HOUSTON, commanding.				
Weihaiwei, China	July 8, 1895	July 9, 1895	41	Asiatic Station.
Chefoo	July 9, 1895	July 22, 1895	37	Target practice.
Taku	July 24, 1895	July 25, 1895	123	
Chefoo	July 26, 1895	Aug. 19, 1895	159	
Shanghai	Aug. 23, 1895	Sept. 24, 1895	543	
Chinkiang	Sept. 25, 1895	Sept. 26, 1895	194	
Nanking	Sept. 26, 1895	Sept. 28, 1895	61	
Wuhu	Sept. 28, 1893	.....do.....	71	
Poyang Lake	Sept. 30, 1895	Oct. 1, 1895	252	
Kinkiang	Oct. 1, 1895	Oct. 2, 1895	23	
Hankow	Oct. 3, 1895	Oct. 7, 1895	189	
Kinkiang	Oct. 7, 1895	Oct. 9, 1895	96	
Poyang Lake	Oct. 9, 1895	Oct. 10, 1895	11	
Wuhu	Oct. 10, 1895	Oct. 11, 1895	135	
Nanking	Oct. 11, 1895	Oct. 13, 1895	40	
Chinkiang	Oct. 13, 1895	Oct. 14, 1895	33	
Woosung	Oct. 14, 1895	Oct. 15, 1895	126	
Shanghai	Oct. 15, 1895	Nov. 24, 1895	12	
Tungcha, China	Nov. 24, 1895	Nov. 25, 1895	37	
Chemulpo, Korea	Nov. 27, 1895	Nov. 28, 1895	437	
Do	Nov. 28, 1895	Apr. 4, 1896	18	
Nagasaki, Japan	Apr. 6, 1896	Apr. 18, 1896	522	
Shanghai, China	Apr. 20, 1896	May 2, 1896	497	
Woosung, China	May 2, 1896	May 9, 1896	12	
Chefoo, China	May 11, 1896	May 23, 1896	540	For docking.
Newchwang, China	May 24, 1896	May 26, 1896	222	
Kobe, Japan	May 31, 1896	June 17, 1896	1,104	Steaming around and planting target.
Yokohama, Japan	June 18, 1896	.....	348	
Total distance sailed	.....	.....	5,883	
Alert, Commander FRANKLIN HANFORD, commanding.				
Callao, Peru	July 3, 1895	July 26, 1895	1,402	Pacific Station.
Panama, Colombia	Aug. 1, 1895	Aug. 10, 1895	1,347	
Do	Aug. 19, 1895	Aug. 22, 1895	16	
Do	Aug. 22, 1895	Sept. 15, 1895	15	
Guayaquil, Ecuador	Sept. 22, 1895	Oct, 9, 1895	835	Passage under steam.
Callao, Peru	Oct. 13, 1895	Dec. 31, 1895	714	
Panama Bay	Jan. 13, 1896	Jan. 15, 1896	1,360	
Panama, Colombia	Jan. 15, 1896	Jan. 31, 1896	16	
Punta Arenas, Costa Rico	Feb. 3, 1896	Feb. 10, 1896	473	One-half boiler power.
Corinto, Nicaragua	Feb. 12, 1896	Feb. 14, 1896	264	
Amapala	Feb. 14, 1896	Feb. 15, 1896	69	
La Libertad, Salvador	Feb. 16, 1896	Feb. 20, 1896	114	
San Jose, Guatemala	Feb. 21, 1896	Feb. 25, 1896	98	
Acapulco, Mexico	Mar. 1, 1896	Mar. 3, 1896	612	
Corinto, Nicaragua	Mar. 7, 1896	May 27, 1896	833	
La Libertad, Salvador	May 28, 1896	June 2, 1896	145	
Acapulco, Mexico	June 6, 1896	June 12, 1896	680	
Manzanillo, Mexico	June 14, 1896	June 15, 1896	312	
San Blas, Mexico	June 16, 1896	June 18, 1896	210	
Mazatlan, Mexico	June 19, 1896	June 29, 1896	123	
Pichilinque Bay, Mexico	July 1, 1896	July 5, 1896	242	
San Diego, Cal	July 11, 1896	July 14, 1896	900	

Vessels serving on stations and duties performed by each—Continued.

THIRD RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Alert, Commander FRANKLIN HANFORD, commanding—Con'd.				
			Knots.	
San Francisco, Cal	July 17, 1896	July 23, 1896	454	
Navy-yard, Mare Island	July 23, 1896	Aug. 25, 1896	26	
San Francisco, Cal	Aug. 25, 1896	Sept. 10, 1896	26	
Navy yard, Mare Island	Sept. 10, 1896	.....do	24	
Port Angeles, Wash	Sept. 15, 1896	.....	788	
Total distance sailed	.....	.....	12,098	
Ranger, Commander E. W. WATSON, commanding.				
Esmeraldas, Ecuador	May 4, 1895	May 10, 1895	280	Pacific Station.
Panama, Colombia	May 13, 1895	May 26, 1895	490	
Guayaquil, Ecuador	June 1, 1895	Sept. 19, 1895	755	
Panama, Colombia	Sept. 24, 1895	Sept. 27, 1895	895	
Acapulco, Mexico	Oct. 5, 1895	Oct. 7, 1895	691	
San Francisco, Cal	Oct. 18, 1895	Nov. 26, 1895	1,891	
Mare Island, Cal	Nov. 26, 1895	.....	23	Put out of commission.
Total distance sailed	.....	.....	5,043	
Monongahela, Commander EDWARD WHITE, commanding.				
Annapolis, Md	.....	June 1, 1896	170	Commissioned May 14, 1896.
Funchal, Madeira	July 7, 1896	July 18, 1896	711	Cruising with cadets.
Annapolis, Md	Aug. 8, 1896	.....	3,929	Placed out of commission Sept. 1, 1896.
Total distance sailed	.....	.....	4,810	

FOURTH RATE.

Yantic, Lieut. Commander S. M. ACKLEY, commanding. Relieved by Lieut. Commander F. P. GILMORE, Oct. 8, 1895.				
Montevideo, Uruguay	July 6, 1895	Sept. 1, 1895	132	South Atlantic Station.
Colonia	Sept. 1, 1895	Sept. 5, 1895	120	
Outer Roads, Buenos Ayres	Sept. 10, 1895	Sept. 13, 1895	22	
Montevideo, Uruguay	Sept. 13, 1895	Sept. 14, 1895	124	
Rio de la Plata	Sept. 14, 1895	.....do	.....	
Montevideo, Uruguay	.....do	Sept. 21, 1895	.....	
Rio de la Plata	Sept. 21, 1895	.....do	.....	
Montevideo, Uruguay	.....do	Dec. 15, 1895	.....	
Chico Bank	Dec. 15, 1895	Dec. 21, 1895	81	
Ensenada	Dec. 21, 1895	Dec. 23, 1895	21	
Montevideo, Uruguay	Dec. 28, 1895	Jan. 29, 1896	96	
Chico Bank	Jan. 29, 1896	Feb. 1, 1896	71	
Montevideo, Uruguay	Feb. 1, 1896	June 22, 1896	79	
Chico Bank	June 22, 1896	June 24, 1896	74	Target practice.
Nueva Palmira	June 24, 1896	June 27, 1896	81	
Do	June 27, 1896	.....	8	
Total distance sailed	.....	.....	909	
Petrel, Lieut. Commander W. H. EMORY, Commanding.				
Nagasaki, Japan	July 1, 1895	July 5, 1895	406	Asiatic Station.
Kobe	July 7, 1895	July 8, 1895	354	
Yokohama, Japan	July 9, 1895	Sept. 1, 1895	575	
Hesaki Lt	Sept. 5, 1895	Sept. 9, 1895	623	
Chefoo, China	Sept. 13, 1895	Oct. 12, 1895	273	
Chemulpo, Korea	Oct. 14, 1895	Oct. 22, 1895	273	
Chefoo, China	Oct. 24, 1895	Nov. 7, 1895	545	
Shanghai, China	Nov. 10, 1895	Feb. 23, 1896	473	
Nagasaki, Japan	Feb. 26, 1896	Mar. 16, 1896	445	
Slotz	Mar. 19, 1896	Mar. 21, 1896	310	
Yokohama, Japan	Mar. 22, 1896	Mar. 28, 1896	858	
Honolulu, Sandwich Islands	Apr. 13, 1896	Apr. 22, 1896	2,072	
San Francisco, Cal	May 1, 1896	May 4, 1896	20	
Mare Island, Cal	May 4, 1896	.....	.....	Put out of commission May 19, 1896.
Total distance sailed	.....	.....	7,227	

Vessels serving on stations and duties performed by each—Continued.

FOURTH RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Fern, Lieut. Commander G. A. BICKNELL, commanding. Relieved by Lieut. Commander H. B. MANSFIELD, Jan. 11, 1896.			*Knots.*	
Boston, Mass	.....	Oct. 1, 1895	.....	
Portsmouth, N. H	Oct. 1, 1895	Oct. 4, 1895	61	
Boston, Mass	Oct. 4, 1895	Oct. 7, 1895	61	
Portsmouth, N. H	Oct. 8, 1895	Oct. 17, 1895	61	
Boone Island	Oct. 17 1895	Oct. 18, 1895	14	Trial of Indiana.
Portsmouth, N. H	Oct. 18, 1895	Oct. 20, 1895	14	
Boston, Mass	Oct. 20 1895	Oct. 21, 1895	61	
Provincetown	Oct. 21, 1895	Oct. 22, 1895	48	
Newport, R. I	Oct. 22, 1895	Oct. 26, 1895	134	
New London, Conn	Oct. 26, 1895	Oct 30 1895	45	Trial of Katahdin.
Do	Oct. 30, 1895	Oct. 31, 1895	40	
Do	Nov. 1, 1895	Nov. 3, 1895	40	
New Haven	Nov. 3 1895	Nov. 4, 1895	43	
New York, N. Y	Nov. 4, 1895	Nov. 9, 1895	56	
New London, Conn	Nov. 10, 1895	Nov. 11 1895	102	
Newport, R. I	Nov 11, 1895	.....do.....	44	
Vineyard Haven	.....do.....	Nov 12, 1895	44	
Provincetown	Nov. 12, 1895	Nov. 13, 1895	69	
Boston, Mass	Nov. 13 1895	Nov. 16, 1895	46	Docked for repairs.
Portsmouth, N. H	Nov. 16, 1895	Apr 11, 1896	61	
Boston, Mass	Apr. 11, 1896	Apr. 24, 1896	61	
Newcastle, N. H	Apr 24, 1896	Apr. 25, 1896	59	
Boston, Mass	Apr. 25 1896	Apr. 26, 1896	55	Speed trial of Massachusetts.
Newport, R. I	Apr. 27, 1896	Apr. 27, 1896	159	
New York Navy-Yard	.....do.....	.....do.....	135	
Tompkinsville, Staten Island	.....do.....	Apr. 28, 1896	7	
New York Navy-Yard	Apr 28, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	Apr. 29, 1896	7	
New York Navy-Yard	Apr. 29, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	May 30, 1896	7	Assigned to North Atlantic Station May 25, 1896.
Fifty-fifth street, North River	May 30, 1896	.....do.....	8	
Grant's Tomb, North River	.....do.....	.....do.....	8	
Tompkinsville, Staten Island	.....do.....	June 1, 1896	11	
New York Navy-Yard	June 1, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	June 5, 1896	7	
New York Navy-Yard	June 5, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	June 6, 1896	7	
New York Navy-Yard	June 6, 1896	June 6, 1896	7	
Tompkinsville, Staten Island	.....do.....	June 8, 1896	7	
New York Navy-Yard	June 8, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	June 9, 1896	7	
New York Navy-Yard	June 9, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	June 11, 1896	7	
New York Navy-Yard	June 11, 1896	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	.....do.....	7	
New York Navy-Yard	.....do.....	June 12, 1896	7	
Tompkinsville, Staten Island	June 12, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 13, 1896	7	
Tompkinsville, Staten Island	June 13, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 15, 1896	7	
Tompkinsville, Staten Island	June 15, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 16, 1896	7	
Tompkinsville, Staten Island	June 16, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 17, 1896	7	
Tompkinsville, Staten Island	June 17, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 18, 1896	7	
Tompkinsville, Staten Island	June 18, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	.....do.....	7	
Tompkinsville, Staten Island	.....do.....	.....do.....	7	
New York Navy-Yard	.....do.....	June 19, 1896	7	
Tompkinsville, Staten Island	June 19, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 20, 1896	7	
Tompkinsville, Staten Island	June 20, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 23, 1896	7	
Fenwick Island Light, 17½ m. S. ¼ E.	June 23, 1896	.....do.....	162	
New York Navy-Yard	June 24, 1896	June 27, 1896	162	
Gravesend Bay	June 27, 1896	June 28, 1896	58	
New York Navy-Yard	June 28, 1896	June 29, 1896	48	
Tompkinsville, Staten Island	June 29, 1896	.....do.....	7	
New York Navy-Yard	.....do.....	June 30, 1896	7	
Fenwick Island Shoal	July 1, 1896	July 2, 1896	162	
New York Navy-Yard	July 3, 1896	July 6, 1896	162	

Vessels serving on stations and duties performed by each—Continued.

FOURTH RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Fern, Lieut. Commander G. A. BICKNELL, commanding, etc.—Continued.			*Knots.*	
Tompkinsville, Staten Island	July 6, 1896	July 6, 1896	7	
New York Navy-Yard	do	do	7	
Tompkinsville, Staten Island	do	July 7, 1896	7	
New York Navy-Yard	July 7, 1896	July 8, 1896	7	
Tompkinsville, Staten Island	July 8, 1896	do	7	
New York Navy-Yard	do	July 21, 1896	7	
Tompkinsville, Staten Island	July 21, 1896	July 22, 1896	7	
New York Navy-Yard	July 22, 1896	July 23, 1896	7	
Tompkinsville, Staten Island	July 23, 1896	July 24, 1896	7	
New York Navy-Yard	July 24, 1896	do	7	
Tompkinsville, Staten Island	do	July 25, 1896	7	
New York Navy-Yard	July 25, 1896	do	7	
Tompkinsville, Staten Island	do	July 27, 1896	7	
New York Navy-Yard	July 27, 1896	do	7	
Tompkinsville, N. Y	do	July 28, 1896	7	
Navy-yard, New York	July 28, 1896	do	7	
Tompkinsville	do	July 29, 1896	7	
Navy-yard, New York	July 29, 1896	do	7	
Tompkinsville	do	July 30, 1896	7	
Navy-yard, New York	July 30, 1896	do	7	
Tompkinsville	July 31, 1896	July 31, 1896	7	
Navy-yard, New York	do	do	7	
Tompkinsville	do	Aug. 1, 1896	7	
Hampton Roads, Virginia	Aug. 7, 1896	Aug. 8, 1896	257	
Navy-yard, Norfolk, Virginia	Aug. 8, 1896	Aug. 10, 1896	11	
Hampton Roads, Virginia	Aug. 10, 1896	Aug. 11, 1896	11	
Newport News, Va	Aug. 11, 1896	do	7	
Navy-yard, Norfolk	do	do	9	
Newport News, Va	do	do	9	
Hampton Roads, Va	do	Aug. 12, 1896	7	
Naval Hospital, Norfolk	Aug. 12, 1896	do	9	
Newport News, Va	do	do	6	
Hampton Roads, Virginia	do	Aug. 14, 1896	7	
Navy-yard, Norfolk	Aug. 14, 1896	Aug. 15, 1896	11	
Do	Aug. 15, 1896	do	11	
Hampton Roads, Virginia	do	do	11	
Tompkinsville, N. Y	Aug. 17, 1896	Aug. 18, 1896	257	
Navy-yard, New York	Aug. 18, 1896	Aug. 21, 1896	7	
Provincetown, Mass	Aug. 22, 1896	Aug. 23, 1896	251	
Navy-yard, Boston	Aug. 23, 1896	Aug. 25, 1896	47	Trial of Brooklyn.
Portsmouth, N. H	Aug. 25, 1896	Aug. 27, 1896	53	
Station 6, trial course	Aug. 27, 1896	do	17	
Navy-yard, Portsmouth	do	Aug. 29, 1896	19	
Navy-yard, Boston	Aug. 29, 1896	do	55	
Navy-yard, New York	Aug. 31, 1896	Aug. 31, 1896	299	
Tompkinsville, N. Y	do	do	7	
Navy-yard, New York	do	do	7	
Tompkinsville, N. Y	do	Sept. 1, 1896	7	
Navy-yard, New York	Sept. 1, 1896	do	7	
Tompkinsville, N. Y	do	do	7	
Navy-yard, New York	do	Sept. 4, 1896	7	
Fishers Island, N. Y	Sept. 5, 1896	Sept. 5, 1896	102	
New London, Conn	do	Sept. 6, 1896	7	
Fishers Island, N. Y	Sept. 6, 1896	Sept. 7, 1896	7	
New London, Conn	Sept. 7, 1896	do	7	
Fishers Island, N. Y	do	Sept. 8, 1896	7	
New London, Conn	Sept. 8, 1896	do	7	
Fishers Island, N. Y	do	do	7	
Navy-yard, New York	Sept. 9, 1896	Sept. 9, 1896	102	
Fishers Island, N. Y	Sept. 10, 1896	Sept. 10, 1896	102	
New London, Conn	do	do	7	
Fishers Island, N. Y	do	Sept. 11, 1896	7	
New London, Conn	Sept. 11, 1896	do	7	
Fishers Island, Connecticut	Sept. 11, 1896	Sept. 12, 1896	7	
New London, Conn	Sept. 12, 1896	do	7	
Fishers Island, Connecticut	do	Sept. 13, 1896	7	
New London, Conn	Sept. 13, 1896	do	7	
Fishers Island, Connecticut	do	Sept. 14, 1896	7	
New London, Conn	Sept. 14, 1896	do	7	
Fishers Island, Connecticut	do	Sept. 15, 1896	7	
New London, Conn	Sept. 15, 1896	do	7	
Fishers Island, Connecticut	do	Sept. 16, 1896	7	
New London, Conn	Sept. 16, 1896	do	7	
Fishers Island, Connecticut	do	do	7	
Navy-yard, New York	Sept. 17, 1896	Sept. 19, 1896	102	
Tompkinsville, N. Y	Sept. 19, 1896	do	7	

Vessels serving on stations and duties performed by each—Continued.

FOURTH RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Fern, Lieut. Commander G. A. BICKNELL, commanding, etc.—Continued.				
			Knots.	
Navy-yard, New York	Sept. 19, 1896	Sept. 21, 1896	7	
Tompkinsville, N. Y	Sept 21, 1896	Sept. 22, 1896	7	
Navy-yard, New York	Sept. 22, 1896	do	7	
Tompkinsville, N. Y	do	Sept. 23. 1896	7	
Navy-yard, New York	Sept. 23, 1896	do	7	
Tompkinsville, N. Y	do	Sept. 24, 1896	7	
Navy-yard, New York	Sept. 24, 1896	do	7	
Tompkinsville, N. Y	do	Sept. 25, 1896	7	
Navy-yard, New York	Sept. 25, 1896	do	7	
Tompkinsville, N. Y	do	Sept. 26, 1896	7	
Navy-yard, New York	Sept. 26. 1896	do	7	
Tompkinsville, N. Y	do	do	7	
Navy-yard, New York	do	Sept. 27, 1896	7	
Tompkinsville, N. Y	Sept. 27, 1896	do	7	
Navy-yard, New York	do	Sept 28, 1896	7	
Tompkinsville, N. Y	Sept. 28, 1896	do	7	
Navy-yard, New York	do	do	7	
Tompkinsville, N. Y	do	Sept. 29, 1896	7	
Navy-yard, New York	Sept. 29, 1896	do	7	
Tompkinsville, N. Y	do	Sept. 30, 1896	7	
Navy-yard, New York	Sept. 30, 1896		7	
Total distance sailed			4,930	
Bancroft, Lieut. Commander W. T. SWINBURNE, Lieut. Commander B. F. TILLEY, assumed command May 14, 1896.				
Annapolis, Md		July 8, 1895		Practice ship for cadets.
Greenport	July 10, 1895	July 16, 1895	493	
Newport News, Va	July 18, 1895	July 19, 1895	356	
Annapolis, Md	July 20, 1895	July 21, 1895	127	
Greenport	July 31, 1895	Aug. 5, 1895	467	
Newport News, Va	Aug. 7, 1895	Aug. 7, 1895	376	
Norfolk, Va	do	Aug. 8, 1895	13	
Annapolis, Md	Aug 9, 1895	June 8, 1896	130	
Newport News, Va	June 10, 1896	June 17, 1896	218	
Chester, Pa	June 18, 1896	June 19, 1896	223	
Philadelphia, Pa	June 19, 1896		15	
Total distance sailed			2,418	
Michigan, Lieut. Commander B. S. RICHARDS, commanding. Relieved by Lieut. Commander E. H. C. LEUTZE, Apr. 30, 1896.				
Pelee Passage		Oct. 14, 1895		
Put in Bay, Ohio	Oct. 14, 1895	Oct. 15, 1895	20	Winter quarters.
Cleveland, Ohio	Oct. 15, 1895	Oct. 21, 1895	61	
Erie, Pa	Oct. 21, 1895	June 7, 1896	105	
Put in Bay, Ohio	June 8, 1896	June 27, 1896	149	
Erie, Pa	June 28, 1896	July 3, 1896	160	Surveying.
Detroit, Mich	July 4, 1896	July 6, 1896	210	Duty connection with Naval Militia of Michigan.
Mackinac, Mich	July 7, 1896	July 10, 1896	260	
Detroit, Mich	July 11, 1896	July 12, 1896	187	
Bay City, Mich	July 13, 1896	July 13, 1896		
Mouth of Saginaw River		July 18, 1896	189	
Detroit, Mich	July 19, 1896	July 22, 1896	588	
Chicago, Ill	July 25, 1896	July 27, 1896	40	
Off Camp Logan, Illinois	July 27, 1896	July 31, 1896	40	
Chicago, Ill	July 31, 1896	Aug. 4, 1896	74	
Milwaukee, Wis	Aug. 4, 1896	Aug. 6, 1896	501	
Detroit, Mich	Aug. 8, 1896	Aug. 13, 1896	46	
Put in Bay, Ohio	Aug. 13, 1896	Sept. 8, 1896	56	Surveying.
Cleveland, Ohio	Sept. 8, 1896	Sept. 13, 1896	49	Cleveland Centennial.
Put in Bay, Ohio	Sept. 13, 1896			Surveying.
Total distance sailed			2,735	
Pinta, Lieut. Commander A. R. COUDEN, commanding.				
Sitka, Alaska	July 29, 1895	June 2, 1896	120	
Hoonah	June 3, 1896	June 5, 1896	30	

Vessels serving on stations and duties performed by each—Continued.

FOURTH RATE—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Pinta, Lieut. Commander A. R. COUDEN, commanding—Cont'd.			*Knots.*	
Bartlett Bay	June 5, 1896	June 8, 1896	23	
Muir Glacier	June 8, 1896	....do	23	
Bartlett Bay	....do	June 9, 1896	96	
Juneau, Alaska	June 9, 1896	June 18, 1896	87	
Portage Cove	June 18, 1896	June 21, 1896	120	
Lindenburg Harbor	June 21, 1896	June 22, 1896	60	
Sitka, Alaska	June 22, 1896			
Total distance sailed			568	

TORPEDO BOAT.

Cushing, Lieut. R. C. SMITH, commanding.				
Newport, R. I.	Sept. 30, 1895	Oct. 1, 1895		Special duty.
Coddington Cove and return	Oct. 1, 1895	....do	10	
Do	Oct. 2, 1895	Oct. 2, 1895	10	
Do	Oct. 3, 1895	Oct. 3, 1895	10	
Do	Oct. 4, 1895	Oct. 4, 1895	10	
Do	Oct. 7, 1895	Oct. 7, 1895	10	
Outer harbor and return	Oct. 9, 1895	Oct. 9, 1895	6	For search-light drill.
Brenton Reef Light-vessel and return.	Oct. 10, 1895	Oct. 10, 1895	11	
Outer harbor, search-light drill	....do	....do	6	
Coddington Cove and return	Oct. 11, 1895	Oct. 11, 1895	10	
Bristol, R. I., and return	Oct. 12, 1895	Oct. 12, 1895	22	
Coddington Cove and return (twice).	Oct. 15, 1895	Oct. 15, 1895	20	
Do	Oct. 16, 1895	Oct. 16, 1895	10	
Bristol, R. I., and return	Oct. 17, 1895	Oct. 17, 1895	22	
Coddington Cove and return	Oct. 18, 1895	Oct. 18, 1895	10	
Bristol, R. I., and return	Oct. 19, 1895	Oct. 19, 1895	22	
Coddington Cove and return	Oct. 21, 1895	Oct. 21, 1895	10	
Do	Oct. 22, 1895	Oct. 22, 1895	10	
Bristol, R. I., and return	Oct. 23, 1895	Oct. 23, 1895	22	
Coddington Cove and return	Oct. 24, 1895	Oct. 24, 1895	10	
Bristol, R. I., and return	Oct. 26, 1895	Oct. 26, 1895	24	
Outer harbor and return	Oct. 28, 1895	Oct. 28, 1895	7	
Coddington Cove and return	Oct. 29, 1895	Oct. 29, 1895	10	
Bristol, R. I., and return	Oct. 30, 1895	Oct. 30, 1895	22	
Coddington Cove and return	Oct. 31, 1895	Oct. 31, 1895	10	
Outer harbor and return	Nov. 1, 1895	Nov. 1, 1895	6	
Brenton Reef and return	Nov. 3, 1895	Nov. 3, 1895	15	
Outer harbor and return	Nov. 4, 1895	Nov. 4, 1895	8	
Coddington Cove and return	Nov. 5, 1895	Nov. 5, 1895	10	
Bristol, R. I., and return	....do	....do	22	
Outer harbor and return	Nov. 6, 1895	Nov. 6, 1895	8	
Bristol, R. I., and return	Nov. 11, 1895	Nov. 11, 1895	22	
Outer harbor and return	Nov. 12, 1895	Nov. 12, 1895	6	
Coddington Cove and return	Nov. 13, 1895	Nov. 13, 1895	10	
Do	Nov. 15, 1895	Nov. 15, 1895	10	
Bristol, R. I., and return	Nov. 17, 1895	Nov. 17, 1895	22	
Coddington Cove and return	Nov. 18, 1895	Nov. 18, 1895	10	
Do	Nov. 20, 1895	Nov. 20, 1895	10	
Outer harbor	Nov. 22, 1895	Nov. 22, 1895	6	
Bristol, R. I., and return	Nov. 26, 1895	Nov. 26, 1895	22	
Coddington Cove and return	Nov. 29, 1895	Nov. 29, 1895	10	
Do	Dec. 3, 1895	Dec. 3, 1895	10	
Tiverton and return	Dec. 4, 1895	Dec. 4, 1895	28	
Bristol, R. I., and return	Dec. 7, 1895	Dec. 7, 1895	22	
Newport, R. I.	....do	Dec. 16, 1895	136	
Bordentown, N. J.	Dec. 16, 1895	Dec. 17, 1895	74	
Annapolis, Md.	Dec. 17, 1895	Dec. 18, 1895	127	
Lower Cedar Pt., Potomac River.	Dec. 18, 1895	Dec. 19, 1895	100	
Washington, D. C.	Dec. 19, 1895	July 24, 1896	48	
Possum Nose, Potomac River	July 24, 1896	July 30, 1896	144	
Annapolis, Md.	July 30, 1896	July 31, 1896	110	
Riverton, Del.	July 31, 1896	Aug. 1, 1896	87	
Navy-yard, New York	Aug. 1, 1896	Aug. 5, 1896	136	
Newport, R. I.	Aug. 5, 1896			
Bristol and return	Aug. 7, 1896	Aug. 7, 1896	24	
Gray Gables and return	Aug. 19, 1896	Aug. 19, 1896	85	
Gould Island and return	....do	....do	10	

Vessels serving on stations and duties performed by each—Continued.

TORPEDO BOAT—Continued.

Name of vessel and port visited.	Date of arrival.	Date of departure.	Distance sailed.	Remarks.
Cushing, Lieut. R. C. SMITH, commanding—Continued.				
			Knots.	
Bristol and return	Aug. 20, 1896	Aug. 20, 1896	24	
Coddington Cove and return	Aug. 25, 1896	Aug. 25, 1896	19	
Bristol and return	Aug. 26, 1896	Aug. 26, 1896	28	
Coddington Cove and return	Aug. 27, 1896	Aug. 27, 1896	14	
Do	Aug. 28, 1896	Aug. 28, 1896	14	
Do	do	do	14	
Bristol and return	Aug. 31, 1896	Aug. 31, 1896	24	
Coddington Cove and return	Sept. 1, 1896	Sept. 1, 1896	14	
Do	Sept. 2, 1896	Sept. 2, 1896	14	
Do	do	do	14	
Do	Sept. 3, 1896	Sept. 3, 1896	14	
Do	Sept. 5, 1896	Sept. 5, 1896	14	
Bristol and return	Sept. 9, 1896	Sept. 9, 1896	24	
Do	do	do	24	
Coddington Cove and return	Sept. 11, 1896	Sept. 11, 1896	14	
Do	Sept. 14, 1896	Sept. 14, 1896	14	
Do	Sept. 15, 1896	Sept. 15, 1896	14	
Do	do	do	14	
Attack on Massachusetts	do	do	8	
Coddington Cove and return	Sept. 16, 1896	Sept. 16, 1896	14	
Do	Sept. 18, 1896	Sept. 18, 1896	14	
Do	Sept. 21, 1896	Sept. 21, 1896	14	
Bristol and return	do	do	24	
Gray Gables and return	Sept. 23, 1896	Sept. 23, 1896	85	
Castle Hill and return	do	do	5	
Coddington Cove and return	Sept. 24, 1896	Sept. 24, 1896	14	
Do	Sept. 25, 1896	Sept. 25, 1896	14	
Do	Sept. 26, 1896	Sept. 26, 1896	14	
Bristol and return	Sept. 28, 1896	Sept. 28, 1896	24	
Total distance sailed			2,190	

B.

REPORT OF THE SUPERINTENDENT OF THE NAVAL ACADEMY.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., October 1, 1896.

SIR: I have the honor to submit my report of the operations of the Naval Academy for the year ending September 30, 1896.

The table following exhibits the number of cadets on probation at the Naval Academy on October 1, 1895, and again at the close of the annual examination in June, 1896:

Class.	Oct. 1, 1895.	June 10, 1896.	Loss.
			Per cent.
First, line division	27	26	3.7
First, engineer division	12	12	0
Second	60	53	11.7
Third	59	50	15.3
Fourth	89	60	32.6

Number of cadets at the Academy October 1, 1895	247
Graduated	38
Deaths	2
Dismissals	4
Dropped	1
Resigned	43
Entered May, 1896	38
Entered September, 1896	57
Number of cadets October 1, 1896	254

In May, 74 candidates presented themselves, of which number 39 passed the mental examination, 1 of whom was rejected for physical disqualification.

In September, 108 candidates presented themselves, of which number 57 passed the mental examinations, none of whom were rejected for physical disqualification.

Two cadets of the preceding class were transferred to the present fourth class owing to long absence due to sickness, and there occurred two reductions due to dismissal, leaving the fourth class at the opening of the academic year 95 in number.

The class which completed the four years' course in 1894 reported for final examination in May, and at its completion were assigned, 28 to the line, 13 to the engineer corps, and 1 to the marine corps; 4 of the class were transferred to the construction corps and did not appear for examination. There remained after the assignment of this class, 3 vacancies in the line, 13 in the engineer corps, and 1 in the marine corps.

The routine of studies and exercises was prosecuted with success throughout the academic year, and during the summer term 135 cadets of the various classes were embarked on board the *Monongahela* and 30 cadets of the first and second classes on board the *Bancroft* for practical training.

The *Monongahela*, leaving the Naval Academy on June 8, cruised to Funchal, Madeira, returning to the Chesapeake Bay on August 21 and to the Academy on August 28, at which time the cadets were given leave to visit their homes until September 30.

This cruise has been of the greatest benefit, professionally and physically, to the cadets, being prosecuted with the utmost zeal by her commanding officer, Commander Edwin White, with the earnest cooperation of the officers detailed for the ship from the Naval Academy. The defects of this converted steamer as a cadet training ship have again been exemplified by the experience of this summer, and, as her commander reports, she is sufficiently well qualified to train topmen but is entirely inadequate for the education of quarter-deck seamen. That which is absolutely essential for this service is a vessel which will exemplify the principles sought to be taught at this training school of young officers, and should combine the necessary qualities for making topmen and quarter-deck seamen.

It is entirely useless to argue that sufficiently good seamen can be made on board steamers, or auxiliary steamers, for there is an education of the nerves and brain and the habit of command which can only be inculcated in the same school which has reared the greatest naval commanders the world has seen, and that school has been the sailing ship. The handling of the greatest modern battle ship, singly or in fleets, and the inevitable return to sail power in cruising vessels demand the highest order of sea training, and it is at this school that the foundation must be laid. Seamen are not born such, they are made, and this is the formative period of the lives of future naval officers.

I can not urge too strongly my former recommendation that Congress be urged to authorize the building of two moderate size composite sailing vessels, which should be supplemented by two small brigs for stationary work. Everything within reason should be done to encourage a love for the water whereas the disposition has been to turn too much to the athletics of the field in competition with secular colleges. The idea of seeking the sports on the element for which the young men are destined has become a strange and repugnant thing.

During the past year a properly equipped boathouse for the cadets has been built, two 8-oar shells of the latest type have been bought, and four catboats are now building, with others to be added. It is hoped that with the proper facilities at hand there may be a lesser tendency for foot ball, and baseball, which, although beneficial in their way, should not be the prominent sport of young sailors. And in the same line of thought it is presumed that with two full-rigged brigs which can be handled in these narrow waters there may be additional means to gain those accomplishments which should be preeminent.

The *Bancroft*, with fifteen members of the first class and fifteen members of the second class, left the Naval Academy on June 8, returning August 25. During her absence this vessel visited the prominent machine shops and building yards to afford the cadets observation and training in the engineering branch. The first-class cadets were those to be assigned permanently to the engineer division, and those of the second class having expressed a desire to take that branch of practical training in anticipation of a permanent selection when the opportunity offers, it might be the part of wisdom to amend the law to permit the separation of a class at the end of the second year, thus giving two years of special instruction, the first of which would be practical, the members of the class thus separated pursuing their studies with the balance of the class.

The cruise of the *Bancroft*, under the intelligent direction of Lieut. Commander B. F. Tilley, promises to be fruitful in beneficial results, and it is recommended that the same course be pursued in future.

The Department has been forced to remove the *Bancroft* from the Naval Academy through exigencies of service, and in my opinion will make a much better cruiser for station duty than a cadet practice steamer. A vessel with greater accommodations for cadets on about the same tonnage will be more efficient, especially if composite built, or wooden sheathed. The vessel should have considerable sail power and with a single screw. Engineering practice can be as well taught with one engine as with two. The *Bancroft* could not well berth more than 30 cadets, whereas one of the gunboat class now building will accommodate 75 to 100 cadets in addition to the crew.

Thirty-four of the cadets entering in May remained at the Academy through the summer by reason of the impossibility of berthing them on board the *Monongahela*. Their training has been most valuable to them, consisting of boat work with oars and under sail, marlinspike seamanship, nautical terms and nomenclature, setting up and infantry drill, swimming and gymnastics. They have qualified as marksmen to 100 yards and in matters professional and physical, as well as morale, they have entirely the advantage of those of their class who entered in September.

It will be entirely to the benefit of the young men, to the Academy, and to the service if the law could be so framed that all candidates should be obliged to report in May, that September examinations should be abolished, and, moreover, that appointments should be made a year in advance.

Considering the fact that the representation at the Military Academy is based upon the same principle as that at the Naval Academy, that the appointments are made upon the recommendation of the same Representatives in Congress, it seems strange that the advantage given to the West Point candidate should not also be given to the Annapolis candidate.

The many excuses now given for failure that the candidates had only a few days' notice would cease to be heard, and the system of cramming be somewhat ameliorated.

I have to recommend that at such time as the Department may deem wise the course of instruction at the Naval Academy may be extended, in order to comprise the post-graduate training now given to a selected number of cadets in foreign schools. The Government is entitled to the services of those who have received the advantages of the advanced training abroad, if needed, in assisting the academic board of the Naval Academy in devising a thorough course of theoretical and practical education of those graduates that may hereafter be detailed for the construction and engineer corps. So long as the present system continues, we are placed in the unpleasant light of appearing incompetent to afford a finished education to the young men of the country. With our present personnel, the thoroughly equipped dockyards, shipbuilding and engineering establishments, it certainly can not be maintained that we are unable to turn out the finished product, both in material and personnel.

To extend the principle further I would recommend an earlier age of entrance, from 15 to 17, or 16 to 18, a reduction of the course from six to four years to be followed by a cruise of all graduates of the usual length, three years as ensigns and assistant engineers; that there should then ensue a compulsory post-graduate course at the Naval

Academy of one year for ensigns and assistant engineers and two years for those selected to become naval constructors. This scheme would permit the curtailment of the present course of study in some of the higher branches pursued now to be completed during the post-graduate year and the final adjustment of relative rank to be then decided by competitive examination. Those destined to become naval constructors will have had the benefit of three years' service afloat with a more intimate knowledge of the manifold requirements of ships that they may have to design, or construct, than can be had under the present method of having no sea duty.

The estimates for the next fiscal year include a moderate amount toward inaugurating the rehabilitation of the Naval Academy on the plan recommended to Congress. The preliminary work will comprise the extension of the sea walls to deep water, which will afford a sufficient enlargement of the grounds to build upon according to the requirements and the preparation of plans for the first buildings to be erected.

There seems to be no doubt in the minds of the successive Boards of Visitors or the official board organized by the Secretary of the Navy to report upon the needs of the Academy, that something should be done soon if it be for safety only. Too many of the buildings are in a state of decrepitude to warrant more extended neglect, and it is earnestly hoped that at the next session of Congress an appropriation may be made which will eventually result in the establishment of an institution worthy of the nation.

A provision was embodied in the act appropriating money for the naval service for the year ending June 30, 1897, instructing the Board of Visitors when visiting the Academy in 1896 to examine into and report to the Secretary of the Navy and to Congress the advisability and desirability of acquiring as an annex to the grounds of the Academy certain grounds in the city of Annapolis.

Being invited by the board to express an opinion, I had to express one decidedly opposed to the acquisition of such property. By itself it would be of no value to the Academy, consisting as it does of two blocks of tenement property, low lying ground and with a street separating it from the water front upon which, and as it were within the Academy grounds, the business of the city is carried on.

The first expense to the Government would be probably double the assessed value of the property, to which would be added the expense of clearing, draining, and inclosing. Its acquisition would not lessen the cost to the Government of extending the grounds in the direction of deep water where it must of necessity go.

It will doubtless be found that from the foundation of the Academy each successive acquisition of land, and there have been many, has been inaugurated by the authorities in charge of its interest. But in this case there seems to have been no recommendation by any person connected with the control and management of the Academy, and I fail to understand the wisdom of this purchase. It has received the approval and favorable report of the Board of Visitors.

Copies of the reports of the commanding officers of the practice ships are transmitted herewith.[1]

Very respectfully,

P. H. COOPER,
Captain, United States Navy, Superintendent.

CHIEF OF BUREAU OF NAVIGATION,
Navy Department, Washington, D. C

[1] Copies of the reports of commanding officers of the practice ships are omitted.

C.

REPORT OF THE COMMANDANT OF THE NAVAL TRAINING STATION.

UNITED STATES NAVAL TRAINING STATION,
Newport, R. I., July 7, 1896.

SIR: I have the honor to submit the operations at this station during the year ending June 30, 1896:

During the year the number of apprentices under training at this station was 600; of this number there were—

At the station, June 30, 1895	108
Received to July 1, 1896	492
Transferred, July 1, 1896	293
Discharged	36
Deserted	3
At station, June 30, 1896	268

Of those received there were—

Received from the *Minnesota*	86
Received from the *Richmond*	162
Received from the *Wabash*	22
Received from the *Vermont*	210
Received from the *Franklin*	1
Received from desertion	1
Enlisted at the station	10
Total	492

There were transferred from station to ships—

Vermont	3
Essex	178
Alliance	108
Wabash	1
Minneapolis	1
Montgomery	1
Richmond	1
Total	293

There have been discharged from the service—

For inaptitude	19
For physical disability	9
An undesirable person	1
Under General Order, No. 414	7
Total	36

Largest number at station June 30, 1896	268
Smallest number at station August 2, 1895	88
Average number present daily	191

Desertions:	
From duty	1
From leave	2
Total	3

The system of training has been the same as that of the preceding year, the results, I think, being very satisfactory.

In the autumn of last year ground was broken for a new hospital, situated on the northeast shore of the Training Station, which will be completed this month. The old hospital might be converted into comfortable quarters for the commanding officer of the training station by obtaining a small appropriation, an estimate for which will be submitted.

Grading of the grounds and filling in, as previously authorized, has been continued during the year, and all buildings kept in good repair.

The appropriation for the maintenance of the training station for 1897 includes the installation of the city water.

The waterworks company have laid a 6-inch main to the east end of the causeway, and it is expected to have soon completed the necessary connections to supply the station with much-needed water.

Very respectfully,

F. W. DICKINS,
Commander, U. S. N., Commanding.

The CHIEF OF BUREAU OF NAVIGATION,
Navy Department, Washington, D. C.

D.

REPORT OF THE HYDROGRAPHER TO THE BUREAU OF NAVIGATION.

WASHINGTON, D. C., *October 1, 1896.*

SIR: I have the honor to submit the following report of the work of the Hydrographic Office for the fiscal year ending June 30, 1896:

The office has continued its efforts to standardize and simplify the methods of work. It was hoped that it could report at this time that the new method of filing and averaging meteorological data in the meteorological division had been put on a working basis. Discouragements of various kinds have delayed the completion of the scheme, but it is believed that there are now no difficulties in the way that can not be easily surmounted.

Much discouragement has also been met in the efforts of the office to secure a set of exemplars of cloud forms according to recent classification. It can now be stated positively, however, that during the next fiscal year the office will have at least an admirable set of original paintings for its purpose. This question has been continuously under the personal charge of the hydrographer.

An important work, which promises great convenience to the commercial public, has been entered on during the past fiscal year. Many questions have been referred to the office relative to the regulations, facilities, etc., of the various ports of the world, the questions being of a commercial and nonmilitary character. Through the branch offices, the office procured from maritime exchanges and private individuals suggestions as to the questions relative to which information would be of value. The office is now in a fair way to obtain complete answers to all these questions. In due time the information will be carded and used for compiling sailing directions and answering inquiries from those interested in commercial and nautical matters. The office is much indebted to the State Department for its interest and activity in contributing to the purpose stated.

The work of constructing nautical charts has advanced to such a stage that I am able to report:

1. That the set of general ocean charts is complete.

2. That the set of general coast charts of the Western Hemisphere is practically complete.

3. That four-fifths of the special coast charts and harbor and special charts of the Western Hemisphere, outside of the polar regions, are available for issue.

4. That the work has been extended into the Eastern Hemisphere, where the general coast charts of China and Japan are practically complete, and where work is in progress in reference to the general coast charts of southern and eastern Africa.

The organization of the division of chart construction is such that larger appropriations of money could be effectively used in advancing more rapidly to new ground. An increase of $130,000 a year for five years would enable the office to complete its set of charts, after which the expense of supplying the Government and the maritime community with the latest editions would be comparatively slight.

The following details are based upon reports received from the heads of divisions and from the officers in charge of the branch offices:

DIVISION OF CHART CONSTRUCTION.

The data resulting from the survey of the coast of Lower California, from Boca de las Animas to Magdalena Bay, in 1895, by the officers of the U. S. S. *Thetis*, under the command of Lieut. Commander C. T. Hutchins, U. S. N., have been incorporated with the data collected

Charts engraved on copper during the fiscal year ending June 30, 1896—Continued.

Location.	Catalogue No.	Total cost of construction.	Title.	Scale.
South America, west coast of Colombia.	1540	$123.57	Sanguianga entrance and Tumaco Road	M. = 0.75 M. = 0.75
West Indies, Haiti	1537	145.25	San Pedro de Macoris	1,000 yds. = 5.0
United States, Ohio	1468	810.98	Cleveland Harbor and approaches, Lake Erie	$\frac{1}{10,560}$
Canada, Lake Huron	1470	1,130.25	French River to Little Current and Cabot Head	M. = 0.75
Canada, British Columbia, Vancouver Island.	1541	224.28	Hecate Cove, Quatsino Sound	M. = 6.0
			Koprino Harbor, Quatsino Sound	M. = 6.0
			Entrance anchorage, Barclay Sound	M. = 8.0
			Stamp Harbor, Alberni Channel, Barclay Sound	M. = 4.0
Canada, Lake Erie	1543	440.41	Pelée Passage	M. = 4.86
United States, Lake Michigan	1467	638.06	South Chicago	St. M. = 2.0
Atlantic Coast	1413	1,186.38	From Belle Isle to New York, including the Gulf of St. Lawrence	D. long. = 1.8
United States and Canada	1480	1,402.49	Detroit River (Bar Point) light-house to Mamajuda light-house, with plan of Limekiln Crossing and vicinity.	M. = 8.45 M. = 7.0
Peru	1544	36.91	Barranca and Supe bays, with plan of Culebras Cove	M. = 2.0 M. = 4.0
	1500	1,184.10	Pacific Ocean	10° long. = 2.0
Japan, south coast of Honshu	1545	137.31	Owashi Wan (Rodney Bay)	M. = 2.0
Total 49 charts		20,053.66		

Charts lithographed and published during the fiscal year ending June 30, 1896.

Title.	Scale.	Number of copies.	Total cost.	Remarks.
Pilot Chart of the North Atlantic Ocean	D. long. =0.27	48,450	$2,126.32	Issued monthly in cooperation with the division of marine meteorology.
Pilot Chart of the North Pacific Ocean	D. long. =0.2	24,178	1,821.65	Do.
Great Circle Sailing Chart of the North Atlantic Ocean, Herrle's method.		100	64.76	Also printed upon the reverse side of the Pilot Charts of the North Atlantic and of the North Pacific Ocean for August, 1895.
Great Circle Sailing Chart of the South Atlantic Ocean, Herrle's method.		100	33.79	Also printed upon the reverse side of the Pilot Chart of the North Atlantic Ocean for September, 1895, and of the North Pacific Ocean for October, 1895.
Great Circle Sailing Chart of the North Pacific Ocean, Herrle's method.		100	25.26	Also printed upon the reverse side of the Pilot Chart of the North Atlantic Ocean for October, 1895, and of the North Pacific Ocean for November, 1895.
Great Circle Sailing Chart of the South Pacific Ocean, Herrle's method.		100	25.47	Also printed upon the reverse side of the Pilot Chart of the North Atlantic Ocean for November, 1895, and of the North Pacific Ocean for December, 1895.
Great Circle Sailing Chart of the Indian Ocean, Herrle's method.		100	26.64	Also printed upon the reverse side of the Pilot Chart of the North Atlantic Ocean for December, 1895, and of the North Pacific Ocean for January, 1896.
Tropical Cyclonic Storms		220		Nature and Path of the West Indian Hurricane, illustrated by two diagrams. Also printed upon the Pilot Chart of the North Atlantic Ocean for August, 1895.
Weather and Cloud Distribution in the Neighborhood of a Cyclonic Storm.		100		Printed also upon the Pilot Chart of the North Pacific Ocean for August, 1895.
Wilson's Oil Distributor		100		Illustrated by 3 figures. Also printed upon the Pilot Charts of the North Atlantic and of the North Pacific oceans for September, 1895.
Steamer Routes from Brito to Yokohama and to Hongkong.		250		Illustrated by a chart of the Western Hemisphere. Also printed upon the reverse side of the Pilot Chart of the North Pacific Ocean for September, 1895.
Audibility of Fog Signals		250		Illustrated by two diagrams. Also printed upon the Pilot Charts of the North Atlantic and of the North Pacific Ocean for October, 1895.
Pacific Trade-Wind Limits		100		Illustrated by a small chart. Also printed upon the Pilot Charts of the North Atlantic and of the North Pacific Ocean for November, 1895.
Tropical Cyclones in the South Pacific Ocean		150		Illustrated by a small chart. Also printed upon the Pilot Charts of the North Atlantic and of the North Pacific Ocean for December, 1895.
Ice in the South Atlantic during 1892-1894		100		Illustrated by a small chart. Also printed upon the Pilot Charts of the North Atlantic and of the North Pacific Ocean for January, 1896.
Recent Accessions to our Knowledge of Ocean Currents Obtained Through Floating Bottles.		200		Illustrated by a chart showing the positions of deposits and recoveries of bottles in the Atlantic, and accompanied by tables giving dates and geographical positions of the deposits and recoveries of bottles in the Atlantic, the Pacific, and the Indian oceans. Also printed as a supplement upon the reverse side of the Pilot Chart of the North Atlantic Ocean for January, 1896.
Wind Directions and Sailing Routes around Cape Horn.		500		Illustrated by a small chart. Also printed upon the Pilot Charts of the North Atlantic and of the North Pacific oceans for February, 1896.
The Storm of October 1, 1895, on the Coast of Lower California.		100		Illustrated by a synoptic chart. Also printed upon the Pilot Chart of the North Pacific Ocean for March, 1896.
March Storms in the North Atlantic, 1890-1895		100		Illustrated by a small chart of the northwestern portion of the North Atlantic. Printed also upon the Pilot Chart of the North Atlantic Ocean for March, 1896.
The Sailing Route from Japan to the West Coast of the United States.		200		Illustrated by a small chart showing the average storm track for January, the Great Circle Route between Yokohama and San Francisco, and the track of the American schooner Aida, accompanied by the log of said vessel from January 15 to February 9, 1896. Also printed upon the Pilot Chart of the North Pacific Ocean for May, 1896.

Charts lithographed and published during the fiscal year ending June 30, 1896—Continued.

Title.	Scale.	Number of copies.	Total cost.	Remarks.
Temperatures of Surface Water, May, 1896	.....	225	.....	Illustrated by a small chart showing isotherms in the northwestern portion of the North Atlantic Ocean. Also printed upon the Pilot Chart of the North Atlantic Ocean for June, 1896.
Hydrographic Office Chart No. 1512. Nickerie River, Dutch Guiana.	M = 4 in.	208	$32.23	
Hydrographic Office Chart No. 639. Anchorages in the Gulf of California, Santa Maria Cove, Tepoca Bay, Santa Teresa Bay, Libertad Anchorage.	Various.	150	35.42	Reproduced by redrawing upon stone.
Hydrographic Office Chart No. 1262. Tracks for full-powered steam vessels (with distances in nautical miles). Edition of August, 1895.	10° long. = 1.2	8,112	216.42	Printed for the Department of State and for the Government Printing Office.
Hydrographic Office Chart No. 1423. St. Croix Island, West Indies.	M = 1.0	1,025	86.73	Printed in colors for sale to the Rev. John E. Scott, of St. Croix, Danish West Indies, to be bound in "The Church Calendar for the Diocese of Antigua in the West Indies."
Hydrographic Office Chart No. 1436. Hay Lake Channel, St. Marys River, Michigan.	6,000 yds. = 8.7	150 2,300	79.47	Printed for the division of chart supply. Published in Notices to Mariners of the Great Lakes, No. 9, of 1895.
Hydrographic Office Chart No. 1462. Toronto Harbor, Lake Ontario, Canada.	M = 3.377	85	24.24	
Hydrographic Office Chart No. 1530. Chart of Submarine Cables of the World with the principal connecting land lines; also coaling, docking, and repairing stations.	10° long. = 1.2	4,471	492.94	Showing all submarine telegraph cables and designating by letters and figures the coaling, docking, and repairing facilities at the various ports of the world.
Hydrographic Office Chart No. 1531. The Arctic Regions, with the Tracks of Search Parties and the Progress of Discovery.	D. lat. = 0.72 in.	2,043	1,090.76	Printed in two sheets, showing in colors and symbols the tracks of the expeditions, the discoveries and surveys of the coasts, and the places of the various disasters in the Arctic Ocean.
Hydrographic Office Chart No. 1536. Mud Lake Channels, St. Marys River, Michigan (Supplement of Hydrographic Office Chart No. 1436, Hay Lake Channel).	6,000 yds. = 8.7	200 2,400	105.27	Printed for the division of chart supply. Published in Notices to Mariners of the Great Lakes, No. 3, of 1896.
Curve of Deviations (II), Bureau of Equipment, Form 8.	.....	1,500	24.66	Printed for the compass office of the Bureau of Equipment, Navy Department.
Diagram explaining the use of terms in giving dimensions of dry docks.	.....	250	7.23	Printed for the Bureau of Yards and Docks, Navy Department.
Map of the Coal and Oil Fields of the United States of Colombia.	.....	20	10.48	Reproduced by photolithography from a map prepared by the Pan-American Investment Co. Printed for the offices of the Navy Department.
Plotting Sheet (I) of the Pilot Chart of the North Atlantic Ocean.	D. long. = 0.27	1,024	32.12	Printed for the division of marine meteorology.
Plotting Sheet (II) of the Pilot Chart of the North Pacific Ocean.	D. long. = 0.2	510	32.85	Do.
Plotting Sheet (III) of the Pilot Chart of the North Pacific Ocean.	D. long. = 0.2	510		
Cover for Daily Synoptic Weather Charts of the North Atlantic Ocean.	.....	180	11.89	Do.

		250	11.46	Do.
Form for Greenwich Noon Weather Observations.		843	4.70	Printed for the division of chart construction.
Form for Computing Latitudes, Longitudes, and Azimuths of Triangulation Stations.		645	9.16	
Form for Recording the Measured Angles of the Triangulation by the U. S. S. Thetis.		725	22.85	Printed for an edition of Hydrographic Office Publication, No. 64.
Three Diagrams illustrating the Nature and Paths of Hurricanes in the North Atlantic Ocean.				
New Flag of Ecuador		1,930	36.33	Published in Notices to Mariners, No. 45, of 1895.
Do		1,000	10.15	Printed for the Commissioner of Navigation, Treasury Department.
Infantry and Artillery Flags and Guidons adopted in place of those illustrated in the first edition of the Introduction to the General Signal Book, Plate XI, approved April 5, 1894.		1,000	16.93	Printed for the Bureau of Navigation, Navy Department.
Index Charts AX, A, B, C, D, E, F, H, I, P, R, S, T, X.	Various scales.	630	125.96	Printed for the Catalogue of Hydrographic Office Charts.
Index Charts N, O		1,235		
Index Chart C		625		Printed for the edition of Hydrographic Office Publication, No. 64.
Form for report of the plate-printing section		250	5.97	Printed for the division of chart construction.
Spectacle Reef, Lake Huron	5,000 ft. = 3.3	2,370		
Richards Reef, Beaver Island Group, Lake Michigan.	40,000 ft. = 3.3	2,370		
Middle and Nine-Foot Shoals, Porte Des Morts, Lake Michigan.	10,000 ft. = 3.3	2,370	122.50	Published in Notices to Mariners of the Great Lakes, No. 7, of 1895.
Martins Reef, Lake Huron	10,000 ft. = 3.3	2,370		
The vicinity of Wangoshance Light-House, Lake Michigan.	10,000 ft. = 3.85	2,370		
Pelée Channel, Lake Erie	M = 2	2,315	213.75	Published in Notices to Mariners of the Great Lakes, No. 10, of 1895.
Small chart showing the Southern Limits of the Southeast Trade Winds in the Pacific Ocean		1,380	12.81	Published in Notices to Mariners, No. 44, of 1895.
Plan of Byng Inlet, Georgian Bay, Lake Huron	M = 1	2,250	35.10	Published in Notices to Mariners of the Great Lakes, No. 1, of 1896.
Automatic Tidal Indicator, Reedy Island Quarantine Station, Delaware River, Delaware.		1,375	15.68	Published in Notices to Mariners, No. 12, of 1896.
Illustrations of United States Navy Uniforms. Plates II, III, IV, VI, VII, VIII, IX, X, XII, XIII, XX, XXI, XXII, XXIII, XXIV, XXV, XXVI, XXVII.		2,600	532.79	Printed for an edition of the Book of Regulations Concerning the Uniforms of the United States Navy.
Plan of Wadasima Harbor, as shown on B. A. Chart No. 357.		140	22.36	Printed and pasted upon copies of Hydrographic Office Chart, No. 934.
Extensive Corrections of Hydrographic Office Chart No. 700.		128	18.35	Printed upon 128 copies.
Total			7,112.54	

NOTE.—In the preceding table the scale of the chart is expressed by the use of the abbreviations D. long., the length of a degree of longitude on the equator; D. lat., the length of a degree of the meridian in the middle latitude of the chart; M., the length of a nautical mile; and St. M., the length of a statute mile.

New editions of 376 of the 881 engraved charts have been prepared, and of this number the following have been partially redrawn and reengraved to incorporate recent information and surveys:

Charts extensively corrected during the fiscal year ending June 30, 1896.

Catalogue number.	Total cost of correction.	Title.
1302	$138.05	The Southwestern Part of Japan, and the Southeastern Coast of Korea from Cape Pelissier to Quelpart Island, including the Korean Straits.
147	183.75	Halifax Harbor, Nova Scotia.
904	60.95	North Pacific Ocean, West Coast North America, between Latitudes 51° 30′ and 55° 30′ north.
1293	46.26	Port Limon, Costa Rica.
1367	36.74	Nikolski Anchorage, Bering Island, Komandorski Islands, Russia. Bering Sea.
2	89.42	Islands in the North Pacific to the Westward of Hawaiian Islands; Niboa or Modu Manu (Bird Island): Necker Island, French Frigate Shoal, Gardiner Island, Maro Reef, and Laysan Island.
1270	325.42	Japan, West Coast of Kiushu: Approaches to Nagasaki Harbor, with plan. Approach to Dry Dock.
620	62.09	Gulf of California, between the Parallels of Latitude 26° and 29° 20′ north.
318	110.14	Arctic Ocean, between Greenland and Nova Zembla.
619	39.07	Gulf of California, from Latitude 29° 15′ north to 32° 40′ north, the Head of the Gulf.
1277	32.87	Madeira Islands: Funchal Bay.
1042	76.27	United States of Colombia, West Coast: Panama Road, including Taboga Island and Anchorage.
993	17.10	Mexico, East Coast: Tampico Harbor.
1186	92.22	Nicaragua, Harbor of San Juan del Norte or Greytown.
1104	165.08	North America, West and South Coasts of Newfoundland, from Bonne Bay to Burge Islands.
1317	45.42	Puerto Rico, North Coast: Port San Juan.
826 a	99.56	South Pacific Ocean, Sheet IV.
825 a	73.33	South Pacific Ocean, Sheet III.
798	58.78	China Sea, Northern Part, Eastern Sheet.
823	45.90	South Pacific Ocean, Sheet 1, Lower Part.
823 a	49.05	South Pacific Ocean, Sheet 1, Upper Part.
40	717.85	Eastern Part Caribbean Sea.
784	51.65	Peru: Callao Bay.
520	431.37	North Pacific Ocean, Sheet IV.
797	135.32	China Sea, Southern Portion, Western Sheet. .
528	59.87	North Pacific Ocean, Sheet III.
854 a	35.54	Indian Ocean, Northern Portion, Western Sheet.
1300	43.14	Japan: From Sado Island to Gulf of Tokyo.
981	54.78	Southeast Coast of Nova Scotia and Newfoundland. Cape St. Mary to Halifax, with the Outer Banks.
269	42.47	Harbors and Anchorages in Magellan Strait.
1301	89.97	Coast of Japan: From Gulf of Tokyo to the Bungo Channel.
854 b	70.05	Indian Ocean, Northern Portion, Eastern Sheet.
Total, 32 charts.	3,579.48	

PLATE MAKING AND PRINTING.

Eight chart plates were purchased in a finished state, 36 were manufactured in the office from the rough copper bought from the rolling mill, and 4 were made by scouring down and polishing condemned plates on which the engraving had become obsolete. Three engraved plates of charts were withdrawn from use. The number of copper and steel chart plates available for printing charts is 881. From these were printed 30,484 copies of charts for issue, and 512 proofs for office use. Ninety-seven thousand five hundred and twenty-four copies were printed by the lithographic section, making a total of 128,008 copies printed and delivered to the other divisions of the office, exclusive of those printed to illustrate books and to accompany Notices to Mariners. One miscellaneous plate was engraved for the division of marine meteorology.

DIVISION OF CHART SUPPLY.

The following report exhibits the receipts, expenditures, corrections, etc., of charts in the division of chart supply for the fiscal year ending June 30, 1896:

HYDROGRAPHIC OFFICE CHARTS.

Received from—	
Division of chart construction	29,010
Division of chart construction (lithographic)	4,454
Division of chart construction (for catalogues)	11,250
Total	44,714
Issued to—	
United States vessels	6,703
Agents, for sale	13,005
Archives	288
Office use	659
Branch hydrographic offices	3,735
Home correspondents	809
Foreign correspondents	284
Miscellaneous	2,090
For catalogues	11,250
Total	38,823
Charts published	54
Charts canceled	16
Copies of charts condemned	1,565
Copies of canceled charts condemned	3,141
Standards corrected from notices	573
Charts corrected from notices	27,444
Charts corrected from other sources	10,833
Hydrographic Office charts on hand June 30, 1896	62,500

There are 1,008 charts on issue, of which 870 are plate and 138 lithographs.

COAST SURVEY CHARTS.

Received from United States Coast and Geodetic Survey	8,730
Issued to—	
United States vessels	5,969
Archives	129
Office use	65
Branch hydrographic offices	1,280
Miscellaneous	922
Total	8,365
Standards corrected from notices	933
Standards corrected from other sources	91
Charts corrected from notices	7,786
Charts corrected from other sources	729
Copies of charts condemned	668
Coast Survey charts on hand June 30, 1896	2,890

BRITISH ADMIRALTY CHARTS.

Received from—	
J. D. Potter	6,082
United States vessels	2,849
B. F. Stevens to United States vessels	1,299
Admiralty office	174
Total	10,404
Issued to—	
United States vessels, this office	4,800
United States vessels from B. F. Stevens	1,299
Miscellaneous	370
Total	6,469

British Admiralty charts on hand July 1, 1895	10,022
British Admiralty charts received during fiscal year	9,105
Total	19,127
British Admiralty charts issued during fiscal year	5,170
British Admiralty charts condemned	793
Total	5,963
Charts on hand June 30, 1896	13,164
British Admiralty charts canceled during fiscal year	15
British Admiralty charts put on issue	65
British Admiralty charts on issue	2,118
Standards corrected from notices	878
Copies corrected from notices	4,209
Copies corrected from other sources	4,089

Eleven vessels were supplied with complete outfits; two vessels were supplied with special outfits; one vessel was supplied with charts necessary to complete an outfit for a change of station, and one outfit was transferred from one vessel to another.

DIVISION OF SAILING DIRECTIONS.

ARCHIVES.

During the past year there have been received, indexed, and catalogued, and placed in the archives on the shelves for reference, 427 documents and 666 books and pamphlets.

Many charts have been received, registered, delivered on requisition, and rearranged; 4,420 copies of charts affected by Notices to Mariners have had reference marks made on them; 20 sets of index charts and 26 catalogues have been compared and kept correct to date, and the division has been kept supplied with the latest charts as fast as published.

For various reasons and purposes, about 14,600 charts were handled during the year, and 84 charts, tracings, and diagrams compiled and drawn.

Summary of new and corrected charts received and of old ones condemned by cancellation.

	Received.	Condemned.
British Admiralty	481	413
Brazilian	2	
Canadian	50	
Chilean	4	
Danish	1	
Dutch	18	2
French	32	23
Geological Survey	106	1
German	7	1
Italian	8	1
Japanese	10	
Miscellaneous	14	
Portuguese	5	1
Russian	24	3
Spanish	16	7
Swedish	21	20
United States Coast and Geodetic Survey	182	165
United States Hydrographic Office	292	15
United States Engineers	201	7
United States Fish Commission	1	
United States Light-House Board	15	
United States Life-Saving Station	12	
War Department	10	
Total since June 30, 1895	1,512	658

In addition to the above, 11,971 slips cut from Notices to Mariners have been pasted in (or referred to) the Sailing Directions and Light-House Board and British Admiralty Light Lists to keep these books corrected to date and ready for immediate issue.

One thousand one hundred and twenty-five announcements of importance to navigation were published in the usual form of Notices to Mariners, which were issued promptly on Saturday of each week, and the circulation of which, together with the extracts, amounted to 764,840.

The foreign Notices to Mariners and reports received have been translated and the more important information derived therefrom republished, as usual. A large amount of original matter from the reports received from United States vessels of war, United States consuls, and our correspondents in the merchant marine of various nationalities has also been published.

The index to the Notices to Mariners for 1895 was received from the printer January 3, 1896, and issued with the first notice of the year.

One hundred and fifty-nine announcements of importance to navigation were published in the usual form of Notices to Mariners of the Great Lakes, which were issued promptly on the 15th of each month, and the circulation of which amounted to 24,500. The index to the Notices to Mariners for the Great Lakes for 1895 was made up for the printer and published with the last issue for 1895.

The Lists of Lights have been revised and kept corrected to date. A new edition of Volume III, enlarged to include the west coast of Europe, was published, corrected to October 26, 1895. New editions of Volumes I and II have been prepared and will be ready to send to the printer July 1, 1896.

PUBLICATIONS.

SAILING DIRECTIONS.

New sailing directions, supplements, and other publications placed on issue during the year.

[Printed at the Government Printing Office.]

Title.	Character.	Price.
H. O. No. 32.—List of Lights of the World, Vol. III, West Coast of Africa and Europe and the Mediterranean Sea, including the Adriatic, the Black Sea, and the Sea of Azov.	Book	$0.25
Annual Report of the Hydrographer to the Bureau of Navigation for the Fiscal Year ending June 30, 1895.	Pamphlet	
H. O. No. 108, Part IV.—Sailing Directions for Lake Erie and Lake Ontario, St. Clair and Detroit Rivers, and Lake St. Clair.	Book	1.00
American Practical Navigator, Revised Edition, 1896	do	2.25
H. O. No. 111.—Tables showing the Local Mean Time of the Sun's Visible Rising and Setting for each Degree of Latitude between 60° N. and 60° S., and for each Degree of the Sun's Declination.	Pamphlet	
Catalogue of Charts, Plans, and Sailing Directions of the U. S. Hydrographic Office.	Book	50
H. O. No. 13.—Useful Tables, 1896	do	1.25
Supplement to H. O. No. 108, Part IV.—Sailing Directions for North Channel and Georgian Bay.	do	1.00
Supplement, second edition, to H. O. No 102.—The Azores, Madeiras, Salvages, Canaries, and Cape Verde Islands, 1892.	Pamphlet	.10
Supplement, second edition, to H. O. No. 88.—The East Coast of South America from Orinoco River to Cape Virgins, 1894.	do	.10
Supplement, second edition, to H. O. No. 105.—West Coast of Africa from Cape Spartel to Cape Agulhas, 1893.	do	.10
Supplement, third edition, to H. O. No. 96.—The Coast of British Columbia, 1891.	do	.20

At the Government Printing office being bound:

H. O. No. 64.—Gulf of Mexico and Caribbean Sea, Vol. II, third edition, Key West, Florida, United States, to the Orinoco River, Venezuela.

During the year the following were prepared, kept corrected to date, and are now ready for the press:

H. O. No. 108.—Sailing Directions for the Great Lakes, second edition.
H. O. No. 89.—The West Coast of South America, second edition, comprising Magellan Strait, Tierra del Fuego, and the Outlying Islands.
Supplement to H. O. No. 99.—Nova Scotia and Bay of Fundy and South Shore of Gulf of St. Lawrence, 1891.
Light Lists, Vols. I, II, and III.

The following new publications were received and put on issue:

From the United States Coast and Geodetic Survey:
United States Coast Pilot, Atlantic Coast, Part VII. From Chesapeake Bay Entrance to Key West.
Tide Tables—Atlantic, Gulf, and Pacific Coasts of the United States, 1896.
Notices to Mariners.
Catalogue of Charts, Plans, and Sailing Directions.
From the United States Light-House Board:
Beacons, Buoys, and Day Marks for the various districts, 1895.
Light List, Atlantic Coast, 1896.
Light List, Pacific Coast, 1896.
Notices to Mariners and Bulletins.
From the United States Treasury Department:
List of Merchant Vessels, 1895.
From the United States Nautical Almanac Office:
Ephemeris and Nautical Almanac, 1897.
Nautical Almanac, 1897.
From the British Admiralty (purchased):
West Coast of Scotland, fourth edition, 1894.
Hydrographic Notices, Nos. 1, 2, 3, 4, 5, 6, 7, 8, and 9, of 1895.
North Sea Pilot, Part II, fifth edition, 1895.
Revised Supplement relating to Africa Pilot, Part III, fifth edition, 1889.
Tide Tables, British and Irish Ports, 1896.
Mediterranean Pilot, Vol. II, third edition, 1895.
Supplement to Channel Pilot, Part I, eighth edition, 1893.
British Admiralty Light Lists, Parts I, II, and III, 1896.
British Admiralty Catalogue of Charts, Plans, and Sailing Directions, 1896.
Baltic Pilot, Part I, third edition, 1895.
Hydrographic Notice No. 1, of 1896.

The following publications were withdrawn from issue, being canceled by later editions placed on issue during the year:

H. O. No. 32—List of Lights of the World, Vol. III.
U. S. Hydrographic Office Catalogue of Charts, Plans, and Sailing Directions, 1895.
Supplement to H. O. No. 96, second edition.
Lists of Beacons, Buoys, and Day Marks, 1894.
Light List, Atlantic Coast, 1895.
Light List, Pacific Coast, 1895.
Tide Tables, Pacific Coast, 1895.
Tide Tables, Atlantic Coast, 1895.
U. S. Coast Pilot, Atlantic Coast, subdivisions Nos. 19, 20, 21, and 22.
List of Merchant Vessels, 1894.
British Admiralty Catalogue, 1895.
British Admirality Light Lists, 1895.
Tide Tables British and Irish Ports, 1895.
West Coast of Scotland, third edition.
North Sea Pilot, Part II, fourth edition.
Supplement to Africa Pilot, Part III.
Mediterranean Pilot, Part II, second edition.

During the year 355 copies of Sailing Directions and 98 copies of Light Lists have been corrected and brought up to date, to supply the places of corrected copies of these publications issued to vessels and branch offices.

During the year fifteen vessels were supplied with outfits of Sailing Directions and nautical books from this Division.

SUMMARY.

The following is a statement in regard to publications received and issued by the division during the fiscal year:

Quarter.	Received.	Issued.	Condemned.
First	1,186	949	57
Second	1,397	1,819	437
Third	2,107	1,751	250
Fourth	1,662	1,717	36
Total	6,352	6,236	780

Total for the fiscal year ending June 30, 1896: 10,375 received, 7,115 issued.

In the summary are included the (1,005) British Admiralty publications purchased and received during the year and also those (635) issued to vessels and branch offices.

DIVISION OF MARINE METEOROLOGY.

The Hydrographic Bulletin has been issued each week during the fiscal year, the last serial number being No. 356. The edition had reached 2,165 at the expiration of the fiscal year ending June 30, 1895. It was 2,200 January 1, 1896, and was increased March 11 of the present year to 2,250, the number now issued.

A new system for the publication of ice reports on the Bulletin was adopted with the issue of May 20, 1896, No. 351. This system divides the localities from which ice reports are received into four divisions: (1) The western, such reports as fall to the westward of longitude 52° west; (2) the central, longitude 52° to 48° west; (3) the eastern, east of longitude 48° west; and (4) the northern, including the Strait of Belle Isle and vicinity. This system affords assistance to the navigator in finding localities desired to examine.

The Pilot Chart of the North Pacific is now permanently established, and is issued regularly on the 23d of each month, for the succeeding month, in order to allow for transmission to the Pacific coast by mail.

During the past fiscal year the data received from observers has been entered in the books prepared for the purpose as soon as received. The report books are then forwarded to the Weather Bureau for the purposes of that Bureau. This course avoids the delays previously encountered by the retention of reports at the Weather Bureau.

The preparation of daily synoptic charts for the North Pacific Ocean was commenced January 1, 1896, in a similar manner to that adopted for the North Atlantic Ocean, from which data are drawn for the Pilot Chart of that ocean, but the daily observations received are not yet numerous enough to permit the plotting of the storm tracks of the North Pacific on the Pilot Chart. When sufficient reports are received these synoptic charts will furnish an interesting and useful means for the study of the movements of areas of high and low barometric pressure across the North Pacific.

The following is a list of the subjects treated on the Pilot Chart of the North Pacific for the fiscal year:

August, 1895.—An illustrated article on "Weather and cloud distribution in the neighborhood of cyclonic storm," based on meteorological conditions existing in a cyclonic storm of November, 1894, as shown by the North Atlantic synoptic charts. On the reverse side the Great Circle Sailing Chart of the North Atlantic Ocean, with explanation as to its use.

September, 1895.—An illustration of the Wilson Oil Distributer, with explanation of its construction and use. *Also reports from* the U. S. S. Marblehead and British

S. S. *Catalonia*, on Inaudible Fog Signals, and a report of a remarkable barometric change, from the navigating officer of the U. S. S. *Castine*. Steamer routes from Brito to Yokohama and Hongkong via San Diego and via Honolulu, with table of distances. On the reverse side these routes are illustrated on an orthographic projection.

October, 1895.—An article on "Audibility of fog signals," with diagrams, an account of certain experiments recently conducted upon the audibility of the siren fog signals of the light-ship off the mouth of the Eider River, and deductions therefrom. Also a special report from Capt. E. G. Schenk, of the cable steamer *Mackey-Bennett*, concerning buoys used in the work of laying or repairing telegraphic cables. On reverse side, Great Circle Sailing Chart of the South Atlantic Ocean, with explanation as to its use

November, 1895.—Tables of Trade Wind Limits of the Pacific, with subchart illustrating the limits of the South Pacific Ocean. On the reverse side, Great Circle Sailing Chart of the North Pacific Ocean, with explanation as to its use.

December, 1895.—An article on "Tropical cyclones in the South Pacific Ocean," with subchart showing the tracks of fifty-five South Pacific hurricanes, and especially calling attention to the tendency of these tracks to converge toward the center of the several island groups. On the reverse side, Great Circle Sailing Chart of the South Pacific Ocean, with explanation as to its use.

January, 1896.—An article on "Ice in the South Atlantic during 1892–1894," with subchart showing the northern limits of extensive ice fields in 1892 and 1893. On the reverse side, Great Circle Sailing Chart of the Indian Ocean, with explanation as to its use.

February, 1896.—A subchart of wind directions and sailing routes around Cape Horn, showing the direction and length of time wind may be expected during the different seasons and the average sailing tracks around the Horn for all seasons, as taken from a large number of quick passages. Also an article on the "Weather in the neighborhood of Cape Horn," dealing with the pressure areas and wind circulation in that locality. Also an article on the "Typhoon encountered by the U. S. S. *Baltimore*."

March, 1896.—An article on "The storm of October 1, 1895, on the coast of Lower California," with diagram showing the path of the storm center.

April, 1896.—An article on "Excessive refraction and cross currents in the Red Sea," with table showing the errors in longitude due to 1′ error in altitude, in latitude, and both altitude and latitude, and in the same with similar signs. Also containing special reports to this office by navigators of the Red Sea.

May, 1896.—An article on "The sailing route from Japan to the west coast of the United States," with subchart showing the Great Circle Route, and the track of the American schooner *Aida* from Shanghai to Victoria. Accompanying the chart is the meteorological report to this office of the schooner *Aida*, whose track is used to illustrate what a sailing vessel may accomplish by taking advantage of certain favorable meteorological conditions.

June, 1896.—An illustrated article on "The equatorial countercurrent of the Pacific," dealing with its origin and velocity, including special reports to this office and a list of bottle-paper reports giving time and position of their being thrown overboard and picked up.

July, 1896.—An article on "Wind and weather in the Gulf of California," with subchart showing paths of storms from well-authenticated reports.

The Pilot Chart of the North Atlantic has been issued regularly for each month of the fiscal year, and every effort has been made to improve its character and increase its efficiency.

The following list exhibits the subjects of interest to mariners upon which articles have appeared or supplements have been issued during the fiscal year:

August, 1895.—An illustrated article upon the frequency of tropical cyclonic storms (West India hurricanes) in the North Atlantic, with diagrams illustrating the path of the storm center, the circulation of the winds, and the proper method of maneuvering; also a note concerning an obstruction to navigation at the mouth of the Chesapeake Bay. On the reverse side a reproduction on a reduced scale of H. O. Chart No. 1280, Great Circle Sailing Chart of the North Atlantic, on the Gnomonic Projection.

September, 1895.—Illustrated article describing construction and use of Wilson's Oil Distributer, in connection with the use of oil at sea; also note from navigating officer of U. S. S. *Marblehead*, referring to unreliability of the fog bell at the Needles, Isle of Wight; note from W. A. E. Critchleigh, S. S. *Catalonia*, giving an instance of the inaudibility of the fog signal at Daunt Rock, coast of Ireland; also an account of a remarkable barometric change at Delagoa Bay, South Africa, from navigating officer of U. S. S. *Castine;* also note and diagram illustrating frequency of West India

hurricanes; also mention of derelicts towed into port. On the reverse side a reproduction on a reduced scale of H. O. Chart No. 1281, Great Circle Sailing Chart of the South Atlantic Ocean, on the Gnomonic Projection.

October, 1895.—An illustrated article giving the results of experiments with the fog siren at the mouth of the Eider River, Holstein, Germany, showing the existence of a series of concentric belts around the lightship throughout which the signal was inaudible; also a note from Capt. E. G. Schenk, of the cable steamer *Mackay-Bennett*, describing distinguishing marks of telegraph cable buoys. On the reverse side a reproduction on a reduced scale of H. O. Chart No. 1282, Great Circle Sailing Chart of the North Pacific Ocean, on the Gnomonic Projection.

November, 1895.—Illustrated article with tables showing the limits of the trade winds in the North and South Pacific Oceans; also a note concerning the appearance of field-ice off the mouth of the Chesapeake Bay, and a doubtful report of a berg off Hatteras. On the reverse side a reproduction of H. O. Chart No. 1283, Great Circle Sailing Chart of the South Pacific Ocean, on the Gnomonic Projection.

December, 1895.—An illustrated article showing character and track of tropical cyclonic storms in the South Pacific Ocean; also a note referring to removal of wreck obstructions by U. S. S. *Dolphin*. On the reverse side a reproduction of H. O. Chart No. 1284, Great Circle Sailing Chart of the Indian Ocean, on the Gnomonic Projection.

January, 1896.—An illustrated article showing limits and character of the extensive ice fields which appeared in the South Atlantic during 1892–94; also note referring to probable early appearance of ice on the Grand Banks. On the reverse side a list of the bottle papers received by the offices during the interval June 1 to December 1, 1895, with descriptive article and chart showing drifts in the North Atlantic.

February, 1896.—Subchart showing force and direction of prevailing winds in the neighborhood of Cape Horn for each season of the year, and average sailing routes east and west, with descriptive text; also brief article concerning character of weather changes near Cape Horn; also note referring to remarkable anticyclonic area prevailing over United Kingdom during January, 1896.

March, 1896.—Subchart showing track of March storms on the North Atlantic during the years 1890–95, with text and tables giving occurrence and regions of winds of storm force.

April, 1896.—Article referring to frequent occurrence of excessive terrestrial refraction in the Red Sea as the probable cause of the conflicting reports of cross currents alleged to exist there.

May, 1896.—Subchart of ice on the Grand Banks during April, 1896; also note concerning southerly drift of derelict schooner *Alma Cummings;* also several ice reports received late in the month of April.

June, 1896.—Subchart showing temperature of surface waters of the North Atlantic near the Grand Banks during May, 1896, with descriptive text; also list of ice reports received during May; also note concerning existence of several coastwise wrecks dangerous to navigation.

July, 1896.—Subchart showing probable location of fishing fleet on the Grand Banks and east of New England during July and August, 1896; also notice concerning transatlantic steamship routes; also several late ice reports.

At the end of the fiscal year ending June 30, 1895, the actual number of observers who had furnished meteorological reports to the office was stated to be 1,250. On January 1, 1896, the number of observers had reached 1,371, while at the end of the fiscal year June 30, 1896, 1,629 were recorded as cooperating with the office in its meteorological work. The record for the last six months of the fiscal year shows an increase of 258 in the number of observers; 223 new observers; 53 old observers resuming contributions, and 18 observers discontinuing the same. An analysis of the classes of observers shows the following numbers: United States men-of-war, 53; United States Coast Survey vessels, 4; United States revenue cutters, 9; United States light-ships, 2; United States Fish Commission steamer, 1; foreign government vessels, 11; land stations, islands, etc., 29; merchant vessels, 1,520. These figures exhibit a gratifying increase in the interest taken by seafaring men in general in the operations of the Hydrographic Office for their benefit.

The receipt of observations from the Great Lakes shows a decided increase in the numbers of observers in those waters. These reports are being used for the preparation of papers on meteorological subjects adapted to the use of navigators cruising on the Lakes.

Cases for filing reports from observers and for filing reports on cards prepared for use in connection with the Hollerith system of electrical counting have been received, and the former has been in use for nearly the whole of the fiscal year. The instruments for utilizing the Hollerith system of electrical counting and averaging have been received and are in readiness for use.

BRANCH OFFICES.

The statistics of the branch offices show the great amount of helpful work done by those establishments. Through the operations of the branch offices at Chicago and Cleveland, a knowledge of the publications and operations of the Hydrographic Office is being rapidly spread throughout the Great Lakes region. It is believed that only the unfavorable condition of the public Treasury has prevented Congress from increasing the number of branch offices along the Great Lakes. In some of the branch offices the clerical force is too small and the quarters too restricted in space. The Philadelphia office has been moved from the Maritime Exchange to the New Bourse, where it is suitably installed. The New Orleans office has been moved from the Maritime Exchange to the custom-house; it is regretted that its present quarters are inadequate.

For the past three years the hydrographer has been gradually standardizing the furniture, fittings, and instruments of the branch offices, so that all shall have these adjuncts of one kind. It is desired to discontinue, so far as possible, the practice of using makeshift fittings which can not be taken away when an office is moved to other quarters.

From the branch offices the main office receives many suggestions relating to commercial and mercantile needs, which enable the office to give a useful direction to its publications and work.

Principal work done by the branch hydrographic offices for the fiscal year ending June 30, 1896.

	Boston.	New York.	Philadelphia.	Baltimore.	Norfolk.	Savannah.	New Orleans.
Abstract logs forwarded	.....	.....	33	.....	.....	32	2
Barometers compared	1,421	6,492	757	747	544	135	336
Bulletins distributed	12,574	12,410	12,904	7,800	7,256	4,915	3,858
Charts corrected	.....	3,483	1,570	.....	1,785	207	526
Chronometers compared	.....	10	447	518	677	.....	809
Current reports	459	3,716	673	184	.....	2	3
Coast Survey Notices to Mariners distributed	1,246	69,196	377	53,065	58,169	18,208	4,317
Daymarks distributed	3,706	204	322	245	653	703	1,015
Form 105 forwarded (sets)	690	2,661	592	517	110	173	398
Form 105[b] forwarded (sets)	82	223	41	36	.....	.....	18
Form 105 distributed (sets)	1,088	5,645	1,376	1,320	782	747	1,441
Form 105[b] distributed	304	1,484	135	312	315	94	305
Ice reports	255	367	195	114	.....	7	.....
Letters sent	291	4,316	1,035	1,094	50	526	936
Light lists distributed	798	181	91	251	385	154	186
Mascart cablegrams	360	1,075	828	.....	.....	.....	.....
Miscellaneous reports forwarded	678	1,414	337	9	38	20	29
Notices to Mariners distributed	233,905	444,730	362,761	63,766	72,155	56,473	84,764
Notices to Mariners, Great Lakes, distributed	.....	.....	.....	.....	.....	.....	.....
Oil reports	1	9	3	6	.....	.....	.....
Pilot charts:							
North Atlantic	3,891	11,112	3,359	2,349	2,182	1,162	1,852
North Pacific	.....	.....	63	.....	.....	4	.....
Great Lakes	.....	.....	.....	.....	.....	.....	.....
Pamphlets distributed	13	391	.....	.....	.....	483	21
Storm reports	671	553	182	407	.....	28	54
Supplements to Pilot Charts distributed	11	56	.....	52	.....	4	.....
Trade-wind reports	312	218	.....	.....	.....	86	.....
Vessels visited	1,781	2,076	804	1,254	640	515	747
Visits received	815	1,546	685	.....	2,419	283	1,182
Wreck reports	261	176	370	71	10	66	33

Principal work done by the branch hydrographic offices for the fiscal year ending Jun. 30, 1896—Continued.

	San Francisco.	Portland.	Port Townsend.	Cleveland.	Chicago.	Total.
Abstract logs forwarded	51	.....	34	.....	.....	118
Barometers compared	869	11	175	23	45	11,544
Bulletins distributed	.....	.....	.....	2,706	1,020	65,443
Charts corrected	.....	.....	858	.....	372	8,810
Chronometers compared	14	.....	392	.....	.....	2,867
Current reports	10	.....	937	.....	4	5,988
Coast Survey Notices to Mariners distributed	435	350	15,846	.....	.....	221,809
Daymarks distributed	134	53	37	90	143	7,305
Form 105 forwarded (sets)	1,144	.....	219	395	140	6,989
Form 105[b] forwarded (sets)	4	.....	9	1	.....	414
Form 105 distributed (sets)	4,673	439	1,665	872	287	20,335
Form 105[b] distributed	1,208	.....	306	9	3	4,415
Ice reports	48	.....	2	41	.....	1,029
Letters sent	809	.....	1,012	2,642	1,795	14,506
Light lists distributed	98	79	67	86	132	2,516
Mascart cablegrams	.....	.....	.....	.....	.....	2,263
Miscellaneous reports forwarded	215	28	61	1,027	509	4,365
Notices to Mariners distributed	45,960	11,591	90,071	1,052	.....	1,467,228
Notices to Mariners, Great Lakes, distributed	.....	.....	.....	6,936	6,694	13,630
Oil reports	3	.....	6	2	.....	30
Pilot charts:						
North Atlantic	115	.....	1,249	570	776	28,617
North Pacific	3,993	1,790	2,498	29	207	8,584
Great Lakes	.....	.....	.....	143	315	458
Pamphlets distributed	253	.....	82	477	325	2,045
Storm reports	138	.....	52	26	36	2,147
Supplements to Pilot Charts distributed	.....	.....	69	.....	2	194
Trade-wind reports	123	.....	12	.....	.....	751
Vessel visited	1,675	40	83	159	18	9,792
Visits received	3,536	.....	907	2,172	.....	13,545
Wreck reports	8	.....	25	255	2	1,277

Very respectfully,

C. D. SIGSBEE,
Commander United States Navy, Hydrographer.

The CHIEF OF THE BUREAU OF NAVIGATION,
Navy Department, Washington, D. C.

E.

ESTIMATES OF APPROPRIATIONS REQUIRED FOR THE SERVICE OF THE FISCAL YEA ENDING JUNE 30, 1898, BY THE BUREAU OF NAVIGATION, NAVY DEPARTMENT.

FOR THE SUPPORT OF THE BUREAU OF NAVIGATION.

Salaries, Bureau of Navigation.

One chief clerk (appropriated)	$1,800.00
One clerk class 4 (appropriated)	1,800.00
Three clerks class 3 (one heretofore employed in Secretary's Office)	4,800.00
Three clerks class 2	4,200.00
Five clerks class 1 (one heretofore employed in Secretary's Office and one in Steam Engineering)	6,000.00
Five clerks at $1,000 each (appropriated)	5,000.00
Three copyists at $900 each (two heretofore employed in Bureau of Supplies and Accounts and one in Bureau of Equipment)	2,700.00
One copyist (appropriated)	720.00
One assistant messenger (appropriated)	720.00
Three laborers at $660 each (appropriated)	1,980.00
Total	29,720.00

I.—*Salaries, Hydrographic Office.*

Two clerks of class 2 (appropriated)	2,800.00
One clerk class 1 (appropriated)	1,200.00
One assistant messenger (appropriated)	720.00
One watchman (appropriated)	720.00
Draftsmen, engravers, assistant nautical experts, computers, custodian of archives, copyists, copper-plate printers, apprentices, and laborers in the Hydrographic Office	40,000.00
Total	45,440.00

II.—*Contingent and miscellaneous expenses, Hydrographic Office.*

Purchase of copper plates, steel plates, chart paper, electrotyping copper plates, cleaning copper plates, tools, instruments and materials for drawing, engraving and printing, materials for and mounting charts; data for charts and sailing directions; reduction of charts by photography; photolithographing charts for immediate use; transfer of photolithographic and other charts to copper; care and repairs to printing presses, furniture, instruments, and tools; extra drawing and engraving; translating from foreign languages; expert marine meteorological, and other work in the preparation of the Pilot Chart and supplements; and the printing and mailing of the same; and purchase of, compiling, and arranging data for charts and sailing directions and other nautical publications; works and periodicals relating to hydrography; marine meteorology, navigation and surveying	30,000.00
Rent of building and rooms for printing presses, draftsmen, and engravers; storage of copper plates and materials used in the construction and printing of charts; repairs and heating of the same, and for gas, water, and telephone rates (appropriated)	1,500.00
Rent of increased space for the purposes set forth in the preceding item, and for repairing, heating, and lighting the same (submitted)	600.00

Contingent expenses of branch offices at Boston, New York, Philadelphia, Baltimore, Norfolk, Savannah, New Orleans, San Francisco, Portland (Oreg.), Portland (Me.), Chicago, Cleveland, and Port Townsend, including furniture, fuel, lights, rent and care of offices, car fare, and ferriage in visiting merchant vessels, freight, express, telegrams, and other necessary expenses incurred in collecting the latest information for the Pilot Chart, and for other purposes for which the offices were established, including $1,000 for rent of New York office (appropriated).	$17,000.00
For a monthly Pilot Chart of the North Pacific Ocean, showing graphically the matters of value and interest to the maritime community of the Pacific Coast, and particularly the directions and forces of the winds to be expected during the month succeeding the date of issue, the set and strength of the currents, the feeding grounds of whales and seals, the regions of storm, fog, ice, the positions of derelicts and floating obstructions to navigation, and the best routes to be followed by steam and by sail, including the expenses of communicating and circulating information, lithographing and engraving, the purchase of materials for and printing and mailing the chart, the employment of three nautical experts, at $1,600 each, and two tabulators and copyists, at $720 each (appropriated)	10,000.00

FOR THE NAVAL SERVICE.

I.—*Gunnery exercise.*

Prizes for excellence in gunnery exercises and target practice; diagrams and reports of target practice; establishment and maintenance of targets and ranges; hiring established ranges, and for transporting to and from ranges (appropriated)	6,000.00

II.—*Ocean and lake surveys.*

Ocean and lake surveys, the publication and care of the results thereof, the purchase of nautical books, charts, and sailing directions, and freight and express charges on same; preparing and engraving on copper plates the surveys of the Mexican coasts, and the publication of a series of charts of the coasts of Central and South America (appropriated)	14,000.00

III.—*Outfits for naval apprentices.*

Bounties for outfits of 750 naval apprentices, at $45 each (appropriated).	33,750.00

IV.—*Recruiting, transportation, and contingent.*

For expenses of recruiting for the naval service, rent of rendezvous and expenses of maintaining the same, advertising for men and boys, and all other expenses attending the recruiting for the naval service, and for the transportation of enlisted men and boys at home and abroad, for heating apparatus for receiving and training ships, and extra expenses thereof; for freight, telegraphing on public business, postage on letters sent abroad, ferriage, ice, apprehension of deserters and stragglers; continuous-service certificates, discharges, good-conduct badges, and medals for boys; schoolbooks for training ships; packing boxes and materials, and other contingent expenses and emergencies arising under cognizance of the Bureau of Navigation, unforeseen and impossible to classify (appropriated)	45,000.00

V.—*Naval station, Newport, R. I.*

For maintenance of office of commandant, fuel, stationery, books, furniture, freight, and other contingent expenses (appropriated)	1,000.00

VI.—*United States naval training station, Coasters Harbor Island, Rhode Island (for apprentices).*

For dredging channels, repairs to main causeway, roads and grounds, extending sea wall, and the employment of such labor as may be necessary for the proper care and preservation of the same; for repairs to wharf and sea wall; for repairs and improvements to buidings, heating, lighting, and furniture for the same; books and stationery; freight and other contingent expenses; purchase of food, and maintenance of live stock, and mail wagon and attendance on same, and purchase of fresh water (appropriated)	30,000.00
For coal house (submitted)	8,500.00
Total	38,500.00

VII.—*Naval War College and Torpedo School.*

For maintenance of Naval War College and Torpedo School on Coasters Harbor Island, and care of grounds for same, including one draftsman, at $1,200 per year (appropriated)	$9,200.00
For complete installation of standpipes; for fire hose and connections; to complete window casing repairs; rain-water cisterns, pumps and tanks; leveling ground about college, sodding (appropriated)	2,000.00
To continue strengthening of walls already begun and to build two party walls through the building (submitted)	10,000.00
Total	21,200.00

VIII.—*United States Naval Academy, pay of professors and others.*

One professor of mathematics, one of chemistry, and one of physics, at $2,500 each (appropriated)	7,500.00
For one professor of English (after thirty years' service) (appropriated)	2,500.00
For five professors, viz, one of French and Spanish, one of English, two of French, and one of drawing, at $2,200 each (appropriated)	11,000.00
For one assistant professor of French (appropriated)	1,800.00
For one swordmaster (appropriated)	1,500.00
For two assistant swordmasters, at $1,000 each (appropriated)	2,000.00
For one instructor in gymnastics (appropriated)	1,200.00
For one assistant librarian (appropriated)	1,400.00
For one secretary to the Naval Academy (appropriated)	1,800.00
For two clerks to the Superintendent (appropriated)	2,400.00
For one clerk to the commandant of cadets (appropriated)	1,200.00
For one clerk to the paymaster (appropriated)	1,200.00
For one dentist (appropriated)	1,600.00
For one baker (appropriated)	600.00
For one mechanic in department of physics (appropriated)	730.00
For one cook (appropriated)	325.50
For one messenger to the Superintendent (appropriated)	600.00
For one armorer (appropriated)	649.50
For one chief gunner's mate (appropriated)	529.50
For one quarter gunner (appropriated)	469.50
For one coxswain (appropriated)	469.50
For one seaman in the department of seamanship (appropriated)	397.50
For one attendant in department of astronomy and one in department of physics (appropriated)	600.00
For six attendants at recitation rooms, library, store, chapel, and offices, at $300 each (appropriated)	1,800.00
For one bandmaster (appropriated)	528.00
For twenty-one first-class musicians at $348 each (appropriated)	7,308.00
For seven second-class musicians at $300 each (appropriated)	2,100.00
For services of organist at chapel (appropriated)	300.00
Total	54,507.00

Pay of watchmen, mechanics, and others.

For captain of the watch and weigher, at $2.50 per diem (appropriated)	912.50
For four watchmen, at $2 per diem (appropriated)	2,920.00
For foreman of gas and steam-heating works of the Academy, at $5 per diem (appropriated)	1,825.00
For labor at gas works and steam buildings, for masons, carpenters, and other mechanics and laborers, and for care of buildings, grounds, wharves, and boats (appropriated)	37,864.95
For one attendant in purifying house of gas house, at $1.50 per diem (appropriated)	547.50

Pay of steam employees.

For pay of mechanics and others in department of steam engineering (appropriated)	7,824.50

Special course, 1898.

For special course of study and training of naval cadets, as authorized by *act of Congress* approved August 5, 1882 (appropriated)	3,000.00

Repairs of Naval Academy, 1898.

For necessary repairs of public buildings, pavements, wharves, and walls inclosing the grounds of the Naval Academy, improvements, repairs, furniture, and fixtures (appropriated)	$21,000.00
For continuing the grading and improvement of the property condemned under act making appropriations for the naval service for the fiscal year ending June 30, 1890, and the adjacent grounds, and for the improvement of the water front of the Academy, to be immediately available (submitted)[1]	5,000.00

Heating and lighting Naval Academy, 1898.

For fuel and heating and lighting the Academy and school-ships (appropriated)	20,000.00

Contingent, Naval Academy, 1898.

For purchase of books for the library (appropriated)	2,000.00
For stationery, blank books, models, maps, and text-books for the use of instructors (appropriated)	2,000.00
For expenses of the Board of Visitors to the Naval Academy, being mileage and $5.00 per diem for each member for expenses during actual attendance at the Academy (appropriated)	1,500.00
For purchase of chemicals, apparatus, and instruments in the department of physics, and for repairs of the same (appropriated)	2,000.00
For purchase of gas and steam machinery, steam pipes and fittings, rent of buildings for use of the Academy, freight, cartage, water, music, musical and astronomical instruments, uniforms for the bandsmen, telegraphing, feed and maintenance of teams, current expenses and repairs of all kinds, and for incidental labor and expenses not applicable to any other appropriation (appropriated)	32,000.00
For stores in the department of steam engineering (appropriated)	800.00
For materials for repairs in steam machinery (appropriated)	1,000.00
For contingencies for the Superintendent of the Academy (appropriated).	1,000.00
Total	42,300.00

Buildings and grounds.

For extension of sick quarters for cadets, rendered necessary in order that there may be an operating room (submitted)[2]	2,500.00
Total	2,500.00

RECAPITULATION.

NAVAL ACADEMY.

Pay of professors and others	54,507.00
Pay of watchmen, mechanics, and others	44,069.95
Pay of steam employees	7,824.50
Special course, Naval Academy, 1898	3,000.00
Repairs, Naval Academy	26,000.00
Heating and lighting, Naval Academy, 1898	20,000.00
Contingent, Naval Academy	42,300.00
Buildings and grounds, Naval Academy, 1898	2,500.00
Total	200,201.45

[1] Required to complete the estimate of last fiscal year, $20,000 having been asked for and $15,000 appropriated. The work can be completed with the amount now requested.

[2] The extension of the sick quarters should be built. An operating room constructed in the line of modern practice is a positive necessity. Since the recommendation of last year to the same effect, it has been necessary to operate upon one naval cadet under the most adverse circumstances, and without the least approach to the requirements of what is deemed absolutely essential in modern surgery. On two other occasions than the one mentioned above operations have been imminent.

FOR THE SUPPORT OF THE BUREAU OF NAVIGATION.

A. I.	Salaries, Bureau of Navigation	$29,720.00
B. I.	Salaries, Hydrographic Office	45,440.00
B. II.	Contingent and miscellaneous, Hydrographic Office	59,100.00
	Total	134,260.00

FOR THE NAVAL SERVICE.

I.	Gunnery exercise	6,000.00
II.	Ocean and lake surveys	14,000.00
III.	Outfits for naval apprentices	33,750.00
IV.	Recruiting, transportation, and contingent	45,000.00
V.	Naval station, Newport, R. I.	1,000.00
VI.	Naval training station, Coasters Harbor Island	38,500.00
VII.	Naval War College and Torpedo School	21,200.00
VIII.	Naval Academy	200,201.45
	Total	359,651.45

Schedule of bids received and contracts made during the fiscal year ending June 30, 1896.

For building commandant's quarters at the Naval Training Station, Newport, R. I., under advertisement September 11, 1896:

Frederick A. Allen, jr	$10,000
John Dillon	8,500
Michael F. Murphy	9,450
Philip Dowling[1]	7,593
Stewart & Greany	8,234

For building naval hospital at naval training station, Newport, R. I., under advertisement September 11, 1896:

Philip Dowling	$17,993
Michael F. Murphy	19,950
Stewart & Greany[1]	17,495

[1] Accepted.

REPORT

OF THE

CHIEF OF THE BUREAU OF ORDNANCE.

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
Washington, D. C., October 1, 1896.

SIR: I have the honor to submit the annual report of this Bureau, and also transmit estimates for the fiscal year ending June 30, 1898.

ESTIMATES.

(1) Fuel, tools, material and labor, expense of target practice, maintenance of naval proving ground, modern battery for the *Hartford*, and a reserve supply of ammunition	$850,000.00
(2) General repairs to ordnance buildings, machinery, magazines, and appendages	30,000.00
(3) Freight and miscellaneous expenses	8,000.00
(4) Civil establishment at navy-yards	29,324.00
(5) General expenses of the torpedo station	76,500.00
(6) Arming and equipping Naval Militia	50,000.00
(7) Reserve guns for auxiliary cruisers	400,000.00
(8) Toward the armament of vessels authorized	7,720,796.00
Total	9,164,620.00

BREECH-LOADING RIFLES.

The following table shows the present status of the main battery guns whose construction has been thus far authorized:

Caliber.	Number of guns completed to date.	Number of guns in hand partly completed.	Number of guns for which forgings have not been ordered.	Total number of guns required.	Disposition.		
					Condemned.	Number of guns afloat and assigned to vessels building and fitting out.	Training ships, reserve, and for auxiliary cruisers.
4-inch	105	39	20	164	0	132	32
5-inch	85	34	35	154	0	113	41
6-inch	141	0	50	191	2	154	35
8-inch	68	8	2	78	0	74	4
10-inch	26	0	0	26	0	22	4
12-inch	13	0	1	14	0	12	2
13-inch	12	8	14	34	0	32	2
Total	450	89	122	661	2	539	120

Assignment of guns of main battery.

Object.	4-inch.	5-inch.	6-inch.	8-inch.	10-inch.	12-inch.	13-inch.	Total.
Chicago		14		4				18
Boston			6	2				8
Atlanta			6	2				8
Dolphin	2							2
Newark			12					12
Charleston			6	2				8
Yorktown			6					6
Petrel			4					4
Baltimore			6	4				10
Olympia		10		4				14
Texas			6			2		8
Maine			6		4			10
Philadelphia			12					12
San Francisco			12					12
Concord			6					6
Bennington			6					6
Monterey					2	2		4
Cincinnati		10	1					11
Raleigh		10	1					11
Montgomery		9						9
Detroit		9						9
Marblehead		9						9
Bancroft	4							4
New York	12			6				18
Puritan	6					4		10
Miantonomoh					4			4
Amphitrite	2				4			6
Monadnock	2				4			6
Terror					4			4
Machias	8							8
Castine	8							8
Indiana			4	8			4	16
Massachusetts			4	8			4	16
Oregon			4	8			4	16
Columbia	8		2	1				11
Minneapolis	8		2	1				11
Iowa	6			8		4		18
Brooklyn		12		8				20
Nashville	8							8
Wilmington	8							8
Helena	8							8
Gunboat No. 10	6							6
Gunboat No. 11	6							6
Gunboat No. 12	6							6
Gunboat No. 13	6							6
Gunboat No. 14	6							6
Gunboat No. 15	6							6
Kearsarge		14		4			4	22
Kentucky		14		4			4	22
Battle ship No. 7			14				4	18
Battle ship No. 8			14				4	18
Battle ship No. 9			14				4	18
Essex	6							6
Total	132	111	154	74	22	13	33	537
Guns for reserve, training ships, and auxiliary cruisers:								
Alliance	6							6
Lancaster		12						12
Ranger	6							6
Pensacola	1							1
Unassigned	19	31	35	4	4	2	2	97
Total	164	154	189	78	26	14	34	659

No change has been made or is contemplated in the general system of gun construction which has been in use since the reconstruction of the Navy was undertaken. Since the date of the last annual report of this Bureau 71 guns have been completed, viz, thirty-seven 4-inch, fourteen 5 inch, seventeen 8-inch, one 10-inch, and two 12-inch. Fifty-six additional guns were ordered (twenty-seven 4-inch, thirteen 5-inch, eight 8-inch, and eight 13-inch), and the number of guns now in course of completion is 89. These include the eight 13-inch guns and eight 8-inch guns and twenty-eight 5-inch guns for the battle ships *Kear-*

sarge and *Kentucky*, and work upon all these guns is advancing rapidly. The 8-inch guns for the *Brooklyn* have been completed and shipped to Cramp's shipyards for installation in that vessel, her 5-inch guns are completed and awaiting shipment, and the guns for all other vessels in course of construction will be ready in ample time. Those for the *Iowa* only await proof firing. The forgings for a portion of the guns authorized by the last naval bill have been advertised for, viz:

	Sets.
For 4-inch	20
For 5-inch	35
For 6-inch	50
For 8-inch	2

And the proposals for these have been received and are still under consideration by the Department. The remaining forgings (1 set 12-inch and 14 sets 13-inch) required to complete all guns whose construction has thus far been authorized will be advertised for in the near future.

The experimental 8-inch gun made for the test of the Hurst reinforce cartridge has been converted into a spare 10-inch gun.

The conversion of one of the ordinary type 6-inch guns into a rapid-fire gun has been completed, and the gun is now being tested at the proving ground. The Bureau expects to convert all the 6-inch guns as opportunity offers and funds become available. In the meantime the manufacture of 6-inch R. F. guns with the Fletcher breech mechanism for battleships 7, 8, and 9, and for certain of the auxiliary cruisers, will be carried on.

The appropriation of $250,000 for a reserve supply of guns for ships of the Navy is being utilized as follows:

13-inch B. L. R	2
12-inch B. L. R	2
8-inch B. L. R	2
5-inch mounts	20
8-inch mount	1

These, with the guns previously authorized, will supply the needs of the naval service for some time, and the only appropriation for guns estimated for during the next fiscal year (other than those required for the three battleships whose construction was authorized by the last naval appropriation bill) is that for additional guns necessary to arm the auxiliary cruisers.

GUNS FOR SECONDARY BATTERIES OF NAVAL VESSELS.

The following table shows the present condition of the work upon secondary-battery guns for both old and new vessels:

Caliber.	Number required.	Number ordered.			Number completed.			Still to be completed.		
		Hotchkiss.	Driggs.	Total.	Hotchkiss.	Driggs.	Total.	Hotchkiss.	Driggs.	Total.
37-millimeter	77	77	.....	77	77	.....	77	0	0	0
47-millimeter	18	18	.....	18	18	.....	18	0	0	0
53-millimeter	1	1	.....	1	1	.....	1	0	0	0
1-pounder, light	18	18	.....	18	18	.....	18	0	0	0
1-pounder, heavy	207	118	15	133	118	15	133	0	0	0
3-pounder	48	38	10	48	38	10	48	0	0	0
6-pounder	434	194	197	391	170	172	342	24	25	49
3-inch field	100	.....	.....	100	.....	.....	3	0	0	97
Machine guns:	-									
Colt's	145	.....	.....	50	.....	.....	1	0	0	49
Gatling, long	24	.....	.....	24	.....	.....	24	0	0	0
Gatling, short	42	.....	.....	42	.....	.....	42	0	0	0
Total	1,114	464	222	902	440	197	707	24	25	195

Fifty of the 3-inch field guns are being manufactured at the Naval Gun Factory; 3 of these have been completed, and the type gun tested with satisfactory results. Work on the remaining 47 guns is well advanced, they all being rifled and chambered. An order for 50 additional 3-inch field guns has been placed with the American Ordnance Company. All of these guns have the Fletcher breech mechanism, and are fitted with hydraulic recoil sleeves. During the year orders were placed for fifty-seven 6-pounder Driggs-Schroeder rapid-fire guns and thirty-two 6-pounder Hotchkiss rapid-fire guns, and 40 of these have already been delivered.

As a result of further tests of machine guns, the reports of which are forwarded herewith, the Bureau decided upon the provisional adoption of the Colt automatic gun, and an order for 50 of these guns was accordingly placed with Colts' Patent Fire-Arms Manufacturing Company, of Hartford, Conn.

The first of these guns has been accepted, and the remainder will very soon be completed and their issue to service begun.

Additional tests of automatic guns held during the month of September, in which the Hotchkiss, Maxim, and Colt guns were again tried, has resulted in giving the first place again to the Colt gun. As this gun was not entirely satisfactory, the makers have been directed to make certain changes in the gun and present it again for further firing before an additional order shall be given for more guns.

BROWN PRISMATIC POWDER.

Since the last report a sufficient quantity of satisfactory 13-inch powder has been obtained from Du Pont & Co. for the *Indiana* and *Massachusetts*, and one lot manufactured for the *Oregon* by the California Powder Company has been accepted. It is hoped that future orders for this caliber will be supplied with less difficulty than thus far experienced. The disadvantages attending the use of brown powder increase with the caliber of the gun, and an escape from these by the introduction of smokeless powder is much to be desired. The quantity of brown powder manufactured for the Department and accepted was 699,847 pounds. The quantity rejected was 835,700 pounds.

SMOKELESS POWDER.

The manufacture of smokeless powder at the torpedo station, Newport, R. I., has continued during the year, and very successful tests have been made of this powder both in small and large calibers. Consequently the Bureau has determined to commence its issue to service for the R. F. guns, and orders will shortly be placed for its manufacture for all guns from the 1-pounder to the 6-inch R. F. guns.

The ammunition for use in the new small arms and machine guns is loaded with Troisdorf powder, which has been found to give most excellent results, but it is hoped to shortly obtain an equally good small-arm powder of domestic manufacture.

HIGH EXPLOSIVES.

An appropriation of $50,000 having been made by the last Congress for the test of methods of firing high explosives from powder guns, the Department has decided to test a system designed by Mr. Louis Gathmann, whereby it is claimed that a much greater percentage of the projectile weight than is the case with ordinary projectiles can be safely

devoted to the explosive charge. A special 12-inch gun is now being extemporized for this purpose out of the forging for the tube of one of the 13-inch guns of the *Kentucky*. After the test this tube can be finished for the use for which it was originally intended. A contract has been made for ten projectiles for this test, and the gun is in course of construction.

GUN MOUNTS.

Indiana.—Since the date of the last report of this Bureau the U. S. S. *Indiana* has been commissioned, and her main battery tested with satisfactory results.

Monadnock.—The installation of the turret mounts of the U. S. S. *Monadnock* was completed and the vessel commissioned early in the present year. Late reports of her target practice show the mounts to be thoroughly efficient.

Massachusetts and Oregon.—The installation of the batteries of the U. S. S. *Massachusetts* and U. S. S. *Oregon* has also been completed and the vessels commissioned. The tests thus far made of the turret mounts of these vessels are satisfactory.

Puritan.—Some delay in the installation of the turret mounts of the U. S. S. *Puritan* has been occasioned pending a decision as to the best methods to be employed. The work, however, is now being pushed to completion, and this, the most powerful of our monitors, should be ready for commission within a very short time.

Terror.—The pneumatic system of the U. S. S. *Terror*, though practically completed and the vessel commissioned, has not yet undergone any efficient test.

Iowa.—The 8-inch turret mounts for the U. S. S. *Iowa* are completed and are being proved at the Naval Proving Ground. The first of her 12-inch turret mounts was tested at the Naval Proving Ground on August 26 last, with very gratifying results. All of the castings for the remaining three mounts have been accepted and delivered. The work on them is being pushed with energy, and it is expected that these mounts will be completed in ample time to avoid delay in the delivery of that vessel to the Government.

Brooklyn.—Both the 5-inch and 8-inch gun mounts for the U. S. S. *Brooklyn* have been completed and shipped to Cramps' shipyard, where they are being installed in the vessel. The 8-inch gun mounts for this vessel were completed early in the year, but it was found necessary to make some modification in the elevating gear, which caused some delay in the shipment of the mounts.

Kearsarge and Kentucky.—Designs of turret mounts for the 8-inch and 13-inch guns of the U. S. S. *Kearsarge* and U. S. S. *Kentucky* are well advanced, and patterns for the steel castings for these mounts will soon be begun. Both the 8-inch and 13-inch mounts for these vessels will be of the spring-return type, similar in design to the 8-inch and 12-inch mounts of the *Iowa*.

Texas.—Since the date of the last report, the hydraulic pumps of the U. S. S. *Texas* have been moved to a location within the armored redoubt, and this change will very greatly add to the efficiency of the turret guns, as it provides adequate ventilation for the pump rooms.

Miantonomoh.—During the year the turret mounts and hydraulic systems of the U. S. S. *Miantonomoh* have been thoroughly overhauled and put in efficient condition for service.

The 6-inch R. F. mounts, Mark V, mentioned in the last annual report of this Bureau, have been completed, 8 in all. A new design of a

6-inch pedestal mount, Mark VI, for rapid-fire guns has been completed and patterns are being made for the steel castings and a type mount after this design will be begun as soon as the castings are received. There are 59 of these mounts to be made to meet existing needs, 42 for battle ships Nos. 7, 8, and 9, and 17 for reserve for the auxiliary cruisers.

The experimental pedestal mount, Mark V, for 5-inch rapid-fire guns which was in process of construction at the date of the last report was completed and tested with very satisfactory results, and 12 mounts of this design have since been completed and shipped to Cramp's Shipyard for installation in the U. S. S. *Brooklyn*. Orders have been given for the manufacture of 72 more of these mounts, 20 for a reserve supply for ships of the Navy, 35 for reserve for auxiliary cruisers, and 17 for the completion of the outfits of the battle ships *Kearsarge* and *Kentucky*.

The new pedestal mount for the 4-inch rapid-fire gun was also completed and tested, and 89 of these mounts have been ordered, 6 for the *Iowa*, 24 for the *Nashville*, *Wilmington*, and *Helena*, 10 for training ships and reserve for vessels of the Navy, 20 reserve for the auxiliary cruisers, and 29 for the completion of the batteries of gunboats Nos. 10 to 15.

Orders have been placed up to the present time for sets of steel castings for gun mounts as follows:

Caliber of gun.	Required.	Ordered.	Delivered.	Due.	Still to be ordered.
	Sets.	*Sets.*	*Sets.*	*Sets.*	*Sets.*
4-inch	164	164	115	49	0
5-inch	152	152	100	52	0
6-inch	168	168	109	59	0
8-inch	62	54	54	0	8
10-inch	*a* 15	15	15	0	0
12-inch	12	12	12	0	0
13-inch	*a* 33	13	13	0	20
Total	606	578	418	160	28

a Includes one proof mount.

The following table shows the status of gun mounts required for new armaments:

Caliber of gun.	Required.	Completed.	In course of completion.	Not yet commenced.
4-inch	164	79	85	0
5-inch	154	82	72	0
6-inch	189	130	59	0
8-inch	74	66	0	8
10-inch	23	*a* 23	0	0
12-inch	12	9	3	0
13-inch	33	13	0	20
Total	649	402	219	28

a Includes four mounts built by contract for the *Terror*.

GUN SIGHTS.

The adoption by the Bureau of telescope sights for all guns except the smaller caliber of R. F. guns has proved entirely satisfactory. The mechanism for connecting the telescopes to the larger turret guns, as originally installed, was found to lack rigidity and was liable to

derangement from the shock on discharge of the guns. This was caused by the design being hampered by the cramped condition of the turrets. New and stronger mechanism has been substituted for the old, and this difficulty wholly removed.

MODERN BATTERIES FOR OLD VESSELS.

The Department has decided to utilize some of the reserve and auxiliary cruiser guns on old vessels of the Regular Navy. The *Ranger* will be supplied with six 4-inch R. F. guns and four 6-pounders, and the *Michigan* has had her old battery replaced by six 6-pounders and two 1-pounders.

The *Pensacola*, which is to be used as a training ship at San Francisco, will be supplied with one 4-inch R. F., one 6-pounder, one 3-pounder, and one 1-pounder guns for drill purposes.

No appropriation was made by the last Congress for the new battery for the *Hartford*, and an estimate therefor is again submitted. As the repairs to this vessel, for which special appropriations have been made by Congress, will be completed in the near future, it is important that the appropriation for her battery should be made as soon as possible, as it will require some time to construct the guns and mounts intended for her.

PROJECTILES.

During the year contracts were made for projectiles as follows:

Contractor.	Armor-piercing.						Semi-armor-piercing.			Common.						Shrapnel.		
	4-inch.	5-inch.	6-inch.	8-inch.	12-inch.	13-inch.	10-inch.	12-inch.	13-inch.	4-inch.	5-inch.	8-inch.	10-inch.	12-inch.	13-inch.	4-inch.	5-inch.	6-inch.
Carpenter Steel Co	.....	.....	.....	900	50	310	.....	100	200	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sterling Steel Co	25	25	25	925	50	250	.....	100	200	.....	.....	.....	.....	.....	.....	.....	.....	.....
Midvale Steel Co	.....	.....	.....	.....	.....	.....	1,291	.....	200	.....	.....	.....	.....	.....	.....	.....	.....	.....
United States Projectile Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,460	.....	.....	.....	.....	.....	.....
American Projectile Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	181	36	.....	.....	.....	.....	123	39	253
Taylor Iron and Steel Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56	12	600	.....	.....	.....
Total	25	25	25	1,825	100	560	1,291	200	600	181	36	4,460	56	12	600	123	39	253

Orders were also placed for projectiles for minor caliber rapid-fire guns as follows: With the American Projectile Company, for 50,100 6-pounder shell and 5,000 3-inch shrapnel; with the American Ordnance Company, for 1,400 6-pounder shell and 5,000 3-inch shrapnel.

The requirements for armor-piercing shell have been increased in severity to meet the improvements in armor. These shell must now pierce a caliber of hard-faced armor in order to be accepted.

The tests for the 10, 12, and 13 inch semi-armor-piercing shell are the same. They must pass through a 7-inch nickel-steel plate. The 8-inch common shell are required to go unbroken through a 4-inch mild-steel plate. The 13-inch common shell, being of cast steel, are intended for use in target practice and have no ballistic test for acceptance. The 6-pounder shell have to penetrate a 3-inch mild-steel plate without breaking.

A large number of 5-inch and 6-inch projectiles are still needed for

the outfits of ships already authorized by law, and besides these, the Bureau urges that further appropriation be made for reserve projectiles. Experience has shown that lapse of time actually improves the quality of the forged-steel tempered shell necessary for use against armor, and a large store of such projectiles should certainly be accumulated for use in an emergency.

The book descriptive of ammunition, referred to in the last report, has been completed and issued to navy-yards and ships.

ARMOR CONTRACTS.

Since the date of the last report 2,262.7 tons of armor have been delivered, of which 1,075.27 tons are harveyized and 684.84 tons reforged by the Carnegie process. The following table shows the condition of the old contracts for armor to October 1, 1896:

	Carnegie Steel Co.	Bethlehem Iron Co.	Total.
	Tons.	*Tons.*	*Tons.*
Armor delivered to Oct. 1, 1895	8,200.77	8,819.72	17,020.49
Armor delivered since Oct. 1, 1895	862.40	1,400.31	2,262.71
Armor still to be delivered	7	225	232
Total	9,070.17	10,445.03	19,515.20

The contract of March 1, 1893, with the Bethlehem Iron Company has been completed, with the exception of six of the plates for the 12-inch B. L. R. turrets of the *Iowa*, weighing 225 tons in all. The last of these plates will be delivered about December 1 of the present year. The contract of February 28, 1893, with the Carnegie Steel Company has been completed, with the exception of one shutter plate for the *Iowa*, weighing 7 tons. The contracts of June 1, 1896, for 5,600 tons of nickel-steel armor, besides necessary appurtenances for same, for the battle ships *Kearsarge* and *Kentucky*, were awarded as follows:

To the Carnegie Steel Company.

CLASS A.—FOR KEARSARGE.

Exhibit.	Number of pieces.	Description.	Harveyized.	Thickness.	Approximate weight.
				Inches.	*Tons.*
1	6	Side armor, forward	Yes	4	60
1	6	Side armor, double-tapered plates	Yes	4 to 15	137
1	20	Side armor, amidship	Yes	9.5 to 16.5	635
1	4	Side armor, triangular athwartship	Yes	10 and 12	31
		Bolts and nuts			10
3	22	13-inch B. L. R. barbettes	Yes	12.5 to 15	562
		Bolts and nuts			7
4	2	Plate A, 8-inch B. L. R. turrets	Yes	11	44
4	4	Plate B, 8-inch B. L. R. turrets	Yes	9	93
4	6	Tops, 8-inch B. L. R. turrets	No	2	15
4	4	Sight-hood tops	No	1.5	1
4	4	Seam straps	No		2
4	4	Sight hoods	No	7	7
		Bolts and nuts			1
6	4	Casemate, athwartship	Yes	4	34
6	22	Casemate, side	Yes	5	292
		Bolts and nuts			3

To the Carnegie Steel Company—Continued.

CLASS B.—FOR KENTUCKY.

Exhibit.	Number of pieces.	Description.	Harveyized.	Thickness.	Approximate weight.
				Inches.	*Tons.*
3	22	13-inch B. L. R. barbettes	Yes	12.5 to 15	568
		Bolts and nuts			7
4	2	Plate A, 8-inch B. L. R. turrets	Yes	11	44
4	4	Plate B, 8-inch B. L. R. turrets	Yes	9	93
4	6	Tops, 8-inch B. L. R. turrets	No	2	15
4	4	Sight-hood tops	No	1.5	1
4	4	Seam straps	No		2
4	4	Sight hoods	No	7	7
		Bolts and nuts			1
6	4	Casemate, athwartship	Yes	4	34
6	22	Casemate, side	Yes	5	292
		Bolts and nuts			3

Total (exclusive of appurtenances), 2,975 tons.

To the Bethlehem Iron Company.

CLASS A.—FOR KEARSARGE.

Exhibit.	Number of pieces.	Description.	Harveyized.	Thickness.	Approximate weight.
				Inches.	*Tons.*
2	10	Armor shelf, 13-inch B. L. R. turrets	No	2	17
2	2	Plate A, 13-inch B. L. R. turrets	Yes	17	
2	4	Plate B, 13-inch B. L. R. turrets	Yes	15	
2	4	Plate C, 13-inch B. L. R. turrets	Yes	15	416
2	2	Plate D, 13-inch B. L. R. turrets	Yes	15	
	2	Plate E, 13-inch B. L. R. turrets	Yes	15	
2	8	Tops, 13 inch B. L. R. turrets	No	3.5	67
2	4	Seam straps, 13-inch B. L. R. turrets	No		6
2	6	Sight-hood tops, 13-inch B. L. R. turrets	No	2	2
2	6	Sight hoods, 13-inch B. L. R. turrets	No	8	11
		Bolts and nuts			4
5	12	Superstructure, diagonal	Yes	6	105
5	14	Superstructure, side	Yes	6	145
		Bolts and nuts			5
7	1	Conning-tower tube	No	7	10
7	1	Conning-tower armor	Yes	10	44
7	1	Conning-tower shield	Yes	10	12
7	1	Conning-tower top	No	2	3
7	1	Conning-tower shield, top plate	No	2	1
8	12	Splinter bulkheads	No	2	36

CLASS B.—FOR KENTUCKY.

				Inches.	*Tons.*
1	6	Side armor, forward	Yes	4	60
1	6	Side armor, double-tapered plates	Yes	4 to 15	137
1	18	Side armor, amidship	Yes	9.5 to 16.5	635
1	4	Side armor, triangular athwartship	Yes	10 and 12	31
		Bolts and nuts			10
2	10	Armor shelf, 13-inch B. L. R. turrets	No	2	17
2	2	Plate A, 13-inch B. L. R. turrets	Yes	17	
2	4	Plate B, 13-inch B. L. R. turrets	Yes	15	
2	4	Plate C, 13-inch B. L. R. turrets	Yes	15	416
2	2	Plate D, 13-inch B. L. R. turrets	Yes	15	
	2	Plate E, 13-inch B. L. R. turrets	Yes	15	
2	8	Tops, 13-inch B. L. R. turrets	No	3.5	67
2	4	Seam straps, 13-inch B. L. R. turrets	No		6
2	6	Sight-hood tops, 13-inch B. L. R. turrets	No	2	2
2	6	Sight hoods, 13-inch B. L. R. turrets	No	8	11
		Bolts and nuts			4
5	12	Superstructure, diagonal	Yes	6	105
5	14	Superstructure, side	Yes	6	145
		Bolts and nuts			5
7	1	Conning-tower shield	Yes	10	12
7	1	Conning-tower top	No	2	3
7	1	Conning-tower shield, top plate	No	2	1
8	12	Splinter bulkheads	No	2	36

Total (exclusive of appurtenances), 2,625 tons.

The price at which this armor was contracted for is less than the cost of the armor previously furnished to the Navy Department by these two firms, as will appear from the following table:

Comparison of the cost of armor under the contracts of 1893 with that under the contracts of 1896.

Contracts.	Nickel-steel armor, not including harveyizing.			Nickel-steel armor, including harveyizing.			Nickel-steel armor, complete, with bolts and appurtenances, and including the harveyizing of all armor required to be treated by that process, as well as armor not required by the contract to be so treated.		
	Tons.	Cost.	Average cost per ton.	Tons.	Cost.	Average cost per ton.	Tons.	Cost.	Average cost per ton.
1893 ...	6,670	$3,752,785	$562.63	5,634	$3,456,972.58	$613.59	6,763.53	a $4,134,008.16	$611.26
1896 ...	5,600	2,795,190	499.14	5,232	2,910,910.00	556.36	5,660	b 3,122,710.00	551.72
Diff.	.....	.....	63.49	.....	.....	57.23	.....	.....	59.54

a Includes 93.53 tons of bolts and appurtenances, which cost $58,761.
b Includes 60 tons of bolts and appurtenances, which cost $24,000.

NOTE.—In all cases the nickel oxide used in the manufacture of armor is furnished by the Government, and its cost is not included in the above statement.

Great activity has been displayed by the contractors in taking in hand the manufacture of the armor under the new contracts. Up to the date of this report the Carnegie Steel Company has forged 65 plates, rough machined 29 plates, carbonized 51 plates, and water tempered 2 plates, all of thicknesses ranging from 4 to 15 inches. The Bethlehem Iron Company has made about the same progress. It can safely be predicted that the construction of the new battle ships will not be delayed for want of the armor.

In addition to the contracts awarded by this Government for nickel-steel armor, the Russian Government has placed orders for about 1,000 tons with the Carnegie Steel Company, and 3,000 tons with the Bethlehem Iron Company. This marks a new departure for our armor makers, being the first foreign order ever received by them for the manufacture of armor. The ballistic tests of the Carnegie plates, representing lots of 5 and 8 inch armor under this contract, held at the Indian Head Proving Ground, were highly successful.

During the past 12 months the Bethlehem Iron Company has extended its armor plant by the addition of four large new furnaces for harveyizing, making 12 in all, and an enlargement of the machine shop.

There have been no important additions to the Carnegie plant during this same period. The former company now claims a possible yearly output, working full capacity, of 3,600 tons of armor, and the latter of 4,800 tons.

EXPERIMENTAL TESTS.

Several experimental armor plates have been submitted to the Bureau for consideration by inventors. The D'Humy patent armor plate, consisting of slabs placed side by side and keyed together, the front edges forming the face of the plate, was given two tests at Government expense. The first plate tested was 1 inch thick, the second 8 inches. Both plates were failures.

Experimental tests of light shield plates and of protective deck plates, composed of various steel alloys and subjected to different treatments, have been continued, and much valuable information gained.

A ballistic requirement has recently been established for protective deck plates and incorporated in the "Specifications for inspection of steel."

EXPERIMENTAL TURRET.

The most important ballistic test coming under the cognizance of this Bureau held since the date of the last report was that on May 14, 1896, of the experimental 13-inch B. L. R. turret, fitted with a 15-inch curved harveyized nickel-steel turret plate, as a target. The turret structure represented the 13-inch B. L. R. turret of the *Massachusetts* without the barbette, and weighed 450 tons. The target plate weighed 29.5 tons, and the remaining turret armor was represented by ten cast-iron plates weighing 14.8 tons each. An 8-inch oak backing extended all around the turret, being secured against the two ½-inch steel backing plates of the turret. The weight of two 13-inch guns and mounts was represented in the turret by 180 tons of pig-iron, distributed so as to approximate as closely as possible the location of the weights under actual conditions. The structure rested on twenty cylindrical rollers, 12 inches in diameter and 30 inches long each, each roller being prevented from rolling by four wrought-iron wedges.

In this test not only were the usual observations made of the action of the projectiles and the effects of the impacts on the plates, but, by means of a special apparatus and gauges, the movements of the turret, both lateral and vertical, were detected and its deformation accurately noted.

The turret was subjected to three impacts, a 10-inch projectile with a striking energy of 9,829.5 foot-tons being used in the first round, and 12-inch projectiles with striking energies of 17,069 and 23,626 foot-tons in the remaining two.

The main object of this test was to determine whether the turret structure was sufficiently strong to stand the shocks from heavy impacts. Much damage was done to individual parts of the turret, especially by the last projectile, which completely penetrated the plate; but as only two armor bolts securing the ballistic plate were completely carried away and three bent, and as the turret structure as a whole showed no signs of deformation after the last impact, it was considered that the test had conclusively proved that the structure was fully strong enough to stand any attack to which it might be subjected in actual war service. A detailed report of this test will be found in the annual report of the officer in charge of the Naval Proving Ground, on page 76 of this report.

On June 24, 1896, a further test was made with this experimental turret. It was replaced on its foundation in its original position except that the turret was revolved so as to bring the right-hand portion of the target plate normal to the 12-inch gun. Arrangements were then perfected for measuring the rotation and horizontal motion, the jump and distance of recoil, and the velocity of recoil of the turret, when subjected to the impact of a 12-inch shell.

The striking energy of the projectile was 24,015 foot-tons. The distance of revolution of center of turret was 0.36 inch to the right. There were three jumps, the maximum one being 0.47 inch at a point 0.64 inch from the beginning of recoil. The total length of recoil was 4.4 inches, and the velocity of recoil reached a maximum of 9.81 inches per second. The turret was subjected to heavy vibration during recoil.

In addition to the four impacts to which this 15-inch curved plate was subjected in these experiments, it had previously been fired at twice

with a 10-inch gun, in a ballistic test. It is interesting to note that although the plate was through cracked in several places and some of its bolts carried away during these severe tests, no portion of the plate was detached from the turret structure.

BOLTS AND BACKING.

The board appointed by the Department to consider the method of fitting armor and backing to naval vessels submitted its report on January 23, 1896, and the report was approved by the Department on February 3.

The adoption of uniform sizes of armor bolts corresponding to the various thicknesses and classes of armor, and of a standard thickness of wood backing for turrets and side armor, as a result of recommendations made in this report, will greatly simplify the fitting of armor in battle ships of future construction.

GUN-FORGING CONTRACTS.

All contracts for gun forgings which were outstanding at the date of last report have been fulfilled, and new contracts have been made during the year for the forgings for the batteries of the *Kearsarge* and *Kentucky* and of the gunboats thus far authorized. The first of these contracts was for twenty-seven 4-inch and thirteen 5-inch sets with the Bethlehem Iron Company, and has been completed. The second was for eight 8-inch sets with the Midvale Steel Company, and this has been completed. The third was with the Bethlehem Iron Company for eight 13-inch sets, and of these, three sets and a number of odd forgings have been delivered.

A contract with the Bethlehem Iron Company for 100 forgings for 3-inch field guns was also made and has been filled.

Under the last appropriation, advertisement was made for two sets of 8-inch, fifty sets of 6-inch, thirty-five sets of 5-inch, and twenty sets of 4-inch forgings, but the bids made have not been accepted, owing to the prices named for the 4, 5, and 6 inch forgings being unduly in excess of those named for the 8-inch forgings.

The following table shows the number of sets of gun forgings of each caliber thus far delivered and still due, including eight sets of 8-inch and three sets of 10-inch forgings purchased abroad before the establishment of suitable gun-forging plants in the United States:

Gun forgings.

	3-inch.	4-inch.	5-inch.	6-inch.	8-inch.	10-inch.	12-inch.	13-inch.	Total.
Required	101	164	154	191	78	26	14	34	762
Ordered	101	144	119	141	76	26	13	20	640
To be ordered	0	20	35	50	2	0	1	14	122
Delivered:									
Purchased abroad					8	3			11
By Midvale Steel Co	1	65	27	84	40	0	0	0	217
By Bethlehem Iron Co	100	79	92	57	28	23	13	15	407
Total	101	144	119	141	76	26	13	15	635
Not delivered:									
By Midvale Steel Co	0	0	0	0	0	0	0	0	0
By Bethlehem Iron Co.	0	0	0	0	0	0	0	5	5
Total	0	0	0	0	0	0	0	5	5

BATTERIES FOR AUXILIARY CRUISERS.

The below-mentioned steamships have been inspected and classified by the Navy Department, in accordance with the provisions of section 4 of the "Act to provide for ocean mail service between the United States and foreign ports, and to promote commerce," approved March 3, 1891:

SEC. 4. That all steamships of the first, second, and third classes employed as above and hereafter built shall be constructed with particular reference to prompt and economical conversion into auxiliary naval cruisers, and according to plans and specifications to be agreed upon by and between the owners and the Secretary of the Navy, and they shall be of sufficient strength and stability to carry and sustain the working and operation of at least four effective rifled cannon of a caliber of not less than six inches, and shall be of the highest rating known to maritime commerce. And all vessels of said three classes heretofore built and so employed shall, before they are accepted for the mail service herein provided for, be thoroughly inspected by a competent naval officer or constructor detailed for that service by the Secretary of the Navy; and such officer shall report, in writing, to the Secretary of the Navy, who shall transmit said report to the Postmaster-General; and no such vessel not approved by the Secretary of the Navy as suitable for the service required shall be employed by the Postmaster-General as provided for in this act.

The vessels employed in the mail service under the provisions of the above-mentioned act are required to be American-built steamships,[1] and must be constructed after the latest and most approved types, with all modern improvements and appliances for ocean steamers. The act directs that they shall be divided into four classes, viz:

First class shall be iron or steel screw steamships, capable of maintaining a speed of 20 knots an hour at sea in ordinary weather, and of a gross registered tonnage of not less than 8,000 tons.

Second class shall be iron or steel steamships, capable of maintaining a speed of 16 knots an hour at sea in ordinary weather, and of a gross registered tonnage of not less than 5,000 tons.

Third class shall be iron or steel steamships, capable of maintaining a speed of 14 knots an hour at sea in ordinary weather, and of a gross registered tonnage of not less than 2,500 tons.

Fourth class shall be iron or steel or wooden steamships, capable of maintaining a speed of 12 knots an hour at sea in ordinary weather, and of a gross registered tonnage of not less than 1,500 tons.

The description of the steamers thus classified, with the batteries proposed for them, is as follows:

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[1] The "Act to encourage American shipbuilding," approved May 10, 1892, authorizes a certain class of foreign-built steamships to be registered as vessels of the United States, and directs that any steamships so registered shall be available for use by the United States as cruisers or transports.

Description of steamers.

Name.	Class.	Owner.	Route.	When built.	Builders.	Material.	Tonnage.		Propulsion.	Speed per hour.	Proposed battery.					
											Main.			Secondary.		
							Gross.	Net.			6-inch.	5-inch.	4-inch.	6-pounder.	1-pounder.	Machine.
On Atlantic Coast.																
St. Louis	First	International Navigation Co.	New York and Southampton.	1895	Cramp & Sons	Steel	11,629	5,804	Twin screw	22.2	8			4		4
St. Paul	do	do	do	1895	do	do	11,629	5,874	do	22.49	8			4		4
Paris	do	do	do	1889	H. and G. Thompson	do	10,794	6,228	do	20.7	12			6		6
New York	do	do	do	1888	Glasgow, Scotland	do	10,802	6,318	do	20.6	12			6		6
Newport	Third	Pacific Mail Steamship Co.	Laid up at New York.	1880	Roach & Son	Iron	2,735	1,806	Single screw	16			8			8
City of Para	do	do	Transferred to Pacific.	1878	Delaware River S. B. and E. W.	do	3,532	2,505	do	12			8			8
Caracas	do	Red "D" Line	New York and La Guayra.	1889	Cramp & Sons	do	2,584	1,775	do	13			8			6
Philadelphia	do	do	do	1885	do	do	2,520	1,900	do	12			8			6
Venezuela	do	do	do	1889	do	do	2,843	2,037	do				8			8
Orizaba	do	New York and Cuba Mail Steamship Co.	New York, Havana, and Mexico.	1890	Delaware River S. B. and E. W.	Steel	3,497	2,334	do	14			8			6
Yumuri	do	do	do	1889	do	do	3,497	2,332	do	14			8			6
City of Washington.	do	do	do	1877	Roach & Son	Iron	2,684	1,743	do	15			8			8
Saratoga	do	do	do	1878	do	do	2,820	1,973	do	14			8			8
Seneca	do	do	do	1884	do	do	2,729	1,912	do				8			6
Yucatan	do	do	do	1890	Delaware River S. B. and E. W.	Iron and steel.	3,525	2,317	do	14			8			6
Seguranca	do	do	do	1890	do	Steel	4,033	2,806	do	14		6	4		4	3
Vigilanca	do	do	do	1890	do	do	4,115	2,934	do	14		6	4		4	3
Advance	Fourth	Panama Railroad Co.	New York and Colon	1883	Roach & Son	Iron	2,605	1,902	do	15						
Alliance	do	do	do	1886	Delaware River S. B. and E. W.	do	2,985	2,205	do	14						
On Pacific Coast.																
City of Sydney	Third	Pacific Mail Navigation Co.	San Francisco to Panama.	1875	Roach & Son	Iron	3,017	1,966	Single screw	15	6			10		2
City of Peking	do	do	San Francisco to Hongkong.	1874	do	do	5,079	3,129	do	13		6		12		

City of Rio de Janeiro.	....do ...	.....do	.....do	1878	Delaware River S. B. and E. W.	....do ...	3,548	2,275	.....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Peru	....do ...	.....do	.....do	1892	Union Iron Works	Steel....	3,528	2,031	.....do	14	...	9	...	12	...	...
Colon	Fourth ...	.....do	San Francisco to Panama.	1872	Roach & Son.....	Iron	2,186	1,844	.....do	12	...	...	...	...	...	...
San José	....do ...	.....do	.....do	1882	.....do	....do ...	2,081	1,538	.....do	.....	...	...	...	...	...	...
San Blas	....do ...	.....do	.....do	.....	.....do	....do ...	2,075	1,496	.....do	.....	...	...	...	...	...	...
San Juan	....do ...	.....do	.....do	1882	.....do	....do ...	2,070	1,496	.....do	.....	...	...	...	...	...	...
Acapulco	....do ...	.....do	.....do	.....	Harlan & Hollingsworth.	....do ...	2,572	1,759	.....do	12	...	...	...	...	...	...
Total	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46	27	104	54	8	112

It will be seen from the foregoing table that the number of vessels thus far inspected and classified will require:

6-inch R. F. guns	46
5-inch R. F. guns	27
4-inch R. F. guns	104
6-pounder R. F. guns	54
1-pounder R. F. guns	8
Machine guns	112

The act contemplates the conversion into auxiliary naval cruisers of steamships of the first, second, and third classes only, consequently batteries are not assigned to those of the fourth class.

The Bureau has, in previous reports, recommended that a yearly appropriation be made for the manufacture of guns and mounts for these vessels, in order to render them of service in case of an emergency, and Congress at its last session appropriated the sum of $400,000 toward the armament of the vessels in question, and it is earnestly recommended that a similar appropriation be made for the next fiscal year, so that the work already begun may be continued until there is a sufficient number of guns and mounts to equip all of the vessels which are suitable for transports or cruisers. All these guns will be available for any purpose as they and their mounts are made.

The appropriation already made will supply the following:

4-inch R F. guns and mounts	20
5-inch R. F. guns and mounts	35
6-inch R. F. guns and mounts	8
6 inch mounts	9

One of the old type 6 inch guns on hand, together with the eight 6-inch guns of the U. S. S. *Chicago*, exchanged for 5-inch R. F. guns, will be converted into rapid-fire guns for use with these nine mounts on the auxiliary cruisers.

Contracts have already been made for all of these mounts, and bids for the gun forgings have been received and are now under consideration.

ARMAMENT OF NEW VESSELS.

During the year the batteries of the *Massachusetts*, *Oregon*, *Puritan*, and *Monadnock* have been installed and tested by firing with satisfactory results, and the battery of the *Brooklyn* is being installed.

The pneumatic system of the *Terror* has also been tested.

SMALL ARMS.

The first delivery of the new Navy small arm, 10,000 of which were contracted for with the Winchester Repeating Arms Company, New Haven, Conn., has been made, and in a short time all the old-pattern rifles will be replaced. New belts, fitted with pockets to contain three clips or 15 cartridges each, will be issued with the new rifles.

With reference to the frequent press statements in regard to the disadvantages of the small caliber, it is to be noted that at the present moment no nation having any pretensions to military or naval power has in contemplation any other change in the caliber of its small arms than a still further reduction.

AUTOMOBILE TORPEDOES.

Whitehead.—The number of torpedoes actually in service is 112 (2 of the 114 thus far issued to ships having been lost). The number required to outfit vessels in commission and not yet supplied, and for vessels near-

ng completion or contracted for, including the necessary reserve supply, s 186, making 300 in all. Of these 100 Mark I and 50 Mark II have been obtained under contracts with the E. W. Bliss Company, and a contract has recently been concluded with the same company for 100 torpedoes of Mark III type, 5 meters in length, carrying a greatly increased weight of explosive.

An additional number of short torpedoes of Mark II will be necessary to arm the smaller torpedo boats appropriated for by the last Congress and to be held as a reserve to supply deficiencies caused by casualties in exercises, and a contract for these is now in course of preparation.

Howell.—The number of these torpedoes in service is 13 (3 of the 16 thus far issued having been lost). The number required for issue to service is 14, leaving 30 on hand for reserve and to supply deficiencies caused by casualties in exercise.

Torpedo launching apparatus.—The Department having approved the Bureau's recommendation to substitute Whitehead for the Howell torpedoes on board the *Brooklyn*, four lower-deck launching tubes for that vessel were ordered from the E. W. Bliss Company and will soon be ready for installation. The same company has an order for 18 tubes for turntable mounts designed for torpedo boats Nos. 3 to 8, inclusive.

Six small air compressors have been delivered by the E. W. Bliss Company, and five larger compressors ordered from the Rand Drill Company are being assembled for inspection and test. One of these has been inspected and accepted.

Fifty air flasks for two accumulators were purchased from the Seamless Structural Company of Milwaukee, Wis., and assembled at the torpedo station, to be used for experimental practice. Fifty-four flasks ordered from the same company will be used to equip the *Brooklyn* with accumulators and separators.

The automobile torpedo outfits for the *Indiana* and *Oregon* have been completely installed, and the *Massachusetts* only awaits an opportunity to receive her torpedoes to complete her torpedo equipment.

Two lower-deck tubes were temporarily removed from the *Indiana*, and one each from the *Massachusetts* and *Oregon*, and will be retained in store in case it should be at any time desirable to replace them on board.

The E. W. Bliss Company completed the manufacture of a launching tube designed to be used with either the short or the 5-meter torpedo. Other changes in the design comprise a new type of breech closure. This tube has been tested at the Torpedo Station, using the short torpedo, and so far has proven thoroughly satisfactory.

MAGAZINES.

The Department having acquired the tract of land on the southern branch of the Elizabeth River, mentioned in the last annual report of the Bureau, a contract was entered into during the year with W. R. Taylor, of Norfolk, Va., for the erection thereon of the necessary buildings for use as magazines, shell houses, etc., and satisfactory progress has been made with the work.

A contract has also been entered into with Isaac A. Walker & Son, of Philadelphia, Pa., for the erection of additional buildings at the naval magazine, Fort Mifflin, on the Delaware River, near Philadelphia, for which an appropriation was made at the last session of Congress, and work has already begun and is being pushed forward as rapidly as possible.

The installation of the necessary apparatus, pumping machinery, etc., for a water supply at the Naval Powder Depot, near Dover, N. J., has been undertaken, and will be completed in the course of the next thirty days.

OFFICERS PERFORMING ORDNANCE DUTY.

The following are the officers of the Navy employed under this Bureau, with their respective stations and duties:

Name and station.	Duties.
Bureau of Ordnance.	
Lieut. Commander E. C. Pendleton.	Ship's magazines; stowage and supply of ammunition; range finders; gun mounts other than those for turrets.
Lieut. A. E. Culver	Ships' allowances, bureau library, and preparation of new ordnance instructions.
Lieut. H. C. Poundstone	Matters pertaining to the torpedo outfits of vessels.
Lieut. V. O. Chase	Development of engineering and construction of turret mounts.
Ensign Cleland Davis	Matters pertaining to the manufacture of armor.
Prof. P. R. Alger	Marine artillery construction, gun steel, powder, etc.
Washington Navy-Yard.	
Commander Charles O'Neil	Superintendent of the Naval Gun Factory.
Lieut. J. H. Moore	General outside work; m tters in connection with the proving ground; care and installation of machinery, etc.
Lieut. F. E. Greene	6-inch and 8-inch guns, mounts, and accessories.
Lieut. C. J. Badger	Secondary mounts, field guns and mounts, etc.
Lieut. R. F. Nicholson	10-inch, 12-inch, and 13-inch guns, mounts, and accessories.
Lieut. T. S. Rogers	4-inch and 5-inch guns, mounts, and accessories.
Lieut. Joseph Strauss	In charge of drafting room.
Ensign G. W. Williams	In charge of seamen under instruction.
Gunner George Fouse	Member of Board of Inspection.
Gunner J. J. Walsh	In charge of Bellevue magazine and shipment of ship's outfits, manufacture of cartridge bags and miscellaneous articles.
Navy-yard, Norfolk, Va.	
Commander Frederick W. Crocker.	Inspector of ordnance.
Gunner Samuel Cross	On duty at St. Helena and at yard.
Gunner Patrick Lynch	On duty at naval magazine, Craney Island.
Navy-yard, League Island, Pa.	
Commander E. Longnecker	Inspector of ordnance.
Gunner C. H. Venable	Naval magazine, Fort Mifflin, Pa.
Navy-yard, New York.	
Commander J. J. Hunker	Inspector of ordnance,
Lieut. Aaron Ward	Assistant inspector of ordnance.
Gunner C. Dugan	In charge of Naval Powder Depot near Dover, N. J.
Gunner M. W. Gilmartin	In charge of ordnance dock and gunners' division, navy-yard.
Gunner Henry B. Soule	In charge of naval magazine, Fort Wadsworth, Staten Island.
Navy-yard, Boston, Mass.	
Commander Samuel W. Very	Inspector of ordnance.
Gunner J. G. Foster	In charge niter depot, Malden, Mass.
Gunner C. B. Magruder	In charge naval magazine, Chelsea, Mass.
Navy-yard, Portsmouth, N. H.	
Commander Thomas Nelson	Inspector of ordnance.
Navy-yard, Mare Island, Cal.	
Lieut. Frank M. Bostwick	Inspector of ordnance.
Gunner William Halford	In charge naval magazine.
Gunner Joseph R. Ward	On duty in yard.
Torpedo station, Newport, R. I.	
Commander George A. Converse.	Inspector of ordnance in charge of station.
Lieut. Commander W. I. Moore	General charge of grounds, tug, boats, wharves, etc. Supervision of enlisted men, including the detail of seamen under instruction.
Lieut. Hamilton Hutchins	Charge of electrical laboratory, dynamo room, and experimental electrical work, torpedo assembling room, inspection of outfits, magazines, and manufacture of explosives; instructor in practical torpedo work.

Name and station.	Duties.
Torpedo Station, Newport, R. I.—Continued.	
Lieut. J. B. Bernadou	Charge of manufacture of high explosives.
Ensign H. J. Ziegemier	Charge of manufacture of fuses, detonators, primers, etc.; instruction in diving; assistant instructor in practical torpedo work; immediate charge of Stiletto.
Acting Gunner F. J. Applegate	Assistant to inspector of outfits, magazines, etc.
Naval Proving Ground, Indian Head, Md.	
Lieut. N. E. Mason	Inspector of ordnance in charge.
Lieut. C. P. Plunkett	In charge of powder magazines, filling houses, pressure gauges, mounts, projectiles, fuzes, the explosion chamber, small arms and ammunition, and all experimental work not otherwise assigned; member of Board of Inspection and observer at chronographs.
Ensign Philip Williams	In charge of guns, sights, cartridge cases, primers, armor plates and backing, chronographs, and all electrical apparatus; member of Board of Inspection.
Ensign H. H. Christy	Member of Board of Inspection and observer at chronographs; in charge of gun mounts, guns, and sights.
Gunner H. Sinclair	In charge of crane, handling of guns and materials; in charge of time books, general supervisor around the batteries.
Private works.	
Ensign C. B. McVay	Inspector of ordnance, in charge of the manufacture of armor at the works of the Carnegie Steel Co., Pittsburg, Pa.; also of projectiles at the works of the Sterling Steel Co., Demmler, Pa.
Lieut. H. O. Rittenhouse	Inspector of ordnance at the works of the E. W. Bliss Co., Brooklyn, N. Y., of the manufacture of Whitehead torpedoes, at the works of the United States Projectile Co., Brooklyn, N. Y., of projectiles, and at the works of I. G. Johnson & Co., New York City, of gun carriage castings.
Lieut. Commander J. A. Rodgers.	Inspector of ordnance, in charge of the manufacture of armor and gun forgings at the works of the Bethlehem Iron Co., South Bethlehem, Pa.; also of projectiles at the works of the Carpenter Steel Co., Reading, Pa., and of projectiles at the works of the Taylor Iron and Steel Co., Highbridge, N. J.
Lieut. J. C. Wilson	Inspector of ordnance, in charge of the manufacture of gun forgings and projectiles at the works of the Midvale Steel Co., Philadelphia, Pa.; of gun-carriage castings at the works of the American Steel Casting Co., Thurlow, Pa., and at the works of the B. Atha & Illingworth Co., Newark, N. J.
Ensign N. C. Twining	Inspector of ordnance, in charge of the manufacture of rapid-fire and machine guns and their ammunition, and of small arms and ammunition at the works of the Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn.; Union Metallic Cartridge Co., Bridgeport, Conn.; Winchester Repeating Arms Co., New Haven, Conn.; American Ordnance Co., Lynn, Mass., and Bridgeport, Conn.; and of powder tanks at the works of J. B. Chapman & Co., Springfield, Mass.

The following papers accompany this report, and I certify that the photographs and drawings illustrating the test of the experimental turret described in the report of the inspector of ordnance in charge of the Naval Proving Ground are necessary and that they relate entirely to the transaction of the public business, viz:

A. Abstract of offers for furnishing supplies or services, and which were contracted for by the Bureau of Ordnance during the fiscal year ending June 30, 1896, and contracts awarded thereon.

B. Detailed estimates for fiscal year ending June 30, 1898.

C. Annual report of the superintendent of the Naval Gun Factory.

D. Annual report of the inspector of ordnance in charge of the Naval Topedo Station, Newport, R. I.

E. Annual report of the inspector of ordnance, Hartford, Conn.

F. Annual report of the inspector of ordnance in charge of the Naval Proving Ground, Indian Head, Md.

G. Report of the Board on machine guns for the naval service.

Respectfully,

W. T. SAMPSON,
Chief of Bureau of Ordnance.

The SECRETARY OF THE NAVY

A.

Abstract of offers for furnishing supplies or services, and which were contracted for by the Bureau of Ordnance during the fiscal year ending June 30, 1896, and contracts awarded thereon.

NEW MAGAZINE, NORFOLK, VA.

[Advertisement dated May 11, 1896.]

Erection of buildings, etc.:	
John R. Sheehan	$46,000.00
Edward Overman	49,800.00
Sanford, Brooks & Bonsal	71,300.00
E. Hart	49,713.00
Hutchins & Moody	58,882.00
The E. J. Acker Construction Company	47,979.47
E. Thomas & Son	55,000.00
W. R. Taylor	*a* 45,256.00
Connor, Culloby & McCarthy	51,803.00

a Accepted. Contract dated June 30, 1896.

B.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Ordnance, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES.			
Chief clerk (R. S., p. 70, sec. 416; May 28, 1896)	$1,800.00		
Draftsman (same acts)	1,800.00		
One assistant draftsman (July 11, 1888; vol. 25, p. 283, sec. 1; May 28, 189	1,400.00		
One clerk of class 3 (R. S., p. 27, sec. 167; May 28, 1896)	1,600.00		
One clerk of class 2 (same acts)	1,400.00		
One clerk of class 2 (same acts)	1,400.00		
One clerk (same acts)	1,000.00		
One assistant messenger (same acts)	720.00		
One laborer (same acts)	660.00		
		$11,780.00	$12,480.00
ORDNANCE AND ORDNANCE STORES.			
Procuring, producing, preserving, and handling ordnance material; for the armament of ships; for fuel, material, and labor to be used in the general work of the Ordnance Department; for furniture at magazines, at the ordnance dock, New York, and at the Naval Ordnance Proving Ground (June 10, 1896)	180,000.00		
Expenses of target practice (June 10, 1896)	15,000.00		
Maintenance of Proving Ground (June 10, 1896)	5,000.00		
Modern battery for the Hartford (submitted)	150,000.00		
Reserve supply of ammunition (submitted)	500,000.00		
		850,000.00	842,000.00
REPAIRS.			
Necessary repairs to ordnance buildings, magazines, gun parks, boats, lighters, wharves, machinery, and other objects of the like character (June 10, 1896)	.....	30,000.00	30,000.00
CONTINGENT.			
Miscellaneous items, viz: Freight to foreign and home stations, advertising, cartage and express charges, repairs to fire engines, gas and water pipes, gas and water tax at magazines, tolls, ferriage, foreign postage and telegrams to and from the Bureau, technical books, and incidental expenses attending inspections of ordnance material (June 10, 1896)	.....	8,000.00	8,000.00

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Ordnance, Navy Department—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H.:			
One writer, when required (June 10, 1896)	$500.00		
Navy-yard, Boston, Mass.:			
One writer, when required (June 10, 1896)	500.00		
Navy-yard, New York:			
One clerk (June 10, 1896)	1,400.00		
Navy-yard, Washington, D. C.:			
One chemist (June 10, 1896)	2,500.00		
One clerk (June 10, 1896)	1,600.00		
One clerk (June 10, 1896)	1,200.00		
Two writers at $1,017.25 each (June 10, 1896)	2,034.50		
One draftsman (June 10, 1896)	1,800.00		
Three draftsmen at $1,081 each (June 10, 1896)	3,243.00		
One assistant draftsman (June 10, 1896)	772.00		
Two foremen at $1,500 each (June 10, 1896)	3,000.00		
Two copyists at $720 each (June 10, 1896)	1,440.00		
One telegraph operator and copyist (June 10, 1896)	900.00		
Navy-yard, Norfolk, Va.:			
One clerk (June 10, 1896)	1,200.00		
Navy-yard, Mare Island, Cal.:			
One writer (June 10, 1896)	1,017.25		
Naval Ordnance Proving Ground:			
One writer (June 10 1896)	1,017 25		
Naval Torpedo Station, Newport, R. I.:			
One chemist (June 10, 1896)	2,500.00		
One clerk (June 10, 1896)	1,200.00		
One draftsman (June 10, 1896)	1,500.00		
		$29,324.00	$29,324.00
TORPEDO STATION.			
Labor, material, freight and express charges; general care of and repairs to grounds, buildings, and wharves; boats; instruction; instruments; tools; furniture; experiments, and general torpedo outfits (June 10, 1896)	60,000.00		
Continuing extension of sea wall (June 10, 1896)	10,000.00		
Enlarging boiler house, and two new boilers (submitted)	6,500.00		
		76,500.00	75,000.00
ARMING AND EQUIPPING NAVAL MILITIA.			
Arms, accouterments, signal outfits, boats and their equipments, and the printing of the necessary books of instruction for the naval militia of the various States, under such regulations as the Secretary of the Navy may prescribe (June 10, 1896)	.....	50,000.00	50,000.00
RESERVE GUNS FOR AUXILIARY CRUISERS.			
Toward the armament of modern guns for auxiliary cruisers mentioned in the act approved Mar. 3, 1891, and in section 4 of the act approved May 10, 1892 (June 10, 1896).	.....	400,000.00	400,000.00
INCREASE OF THE NAVY, ARMOR AND ARMAMENT.			
Toward the armament and armor of domestic manufacture for the vessels authorized by the act of Aug. 3, 1886; of those authorized by the act of July 19, 1892; of the vessels authorized by the act of Mar. 3, 1893; of the three torpedo boats under the act of July 26, 1894; of the vessels authorized by the act of Mar. 2, 1895, and of those authorized by the act of June 10, 1896 (June 10, 1896).	.....	7,720,796.00	4,371,454.00

Respectfully submitted.

W. T. SAMPSON,
Chief of Bureau of Ordnance.

SEPTEMBER 1, 1896.

C.

ANNUAL REPORT OF THE SUPERINTENDENT OF THE NAVAL GUN FACTORY.

UNITED STATES NAVY-YARD,
Washington, D. C., September 21, 1896.

SIR: I have the honor to submit the following report of the operations of the past year at the Naval Gun Factory:

The manufacture of guns has been confined almost exclusively to those of 8-inch caliber and below.

Of the larger calibers, two 12-inch and one 10-inch, incomplete at date of last report, have been completed.

The forgings for the eight 13-inch guns of the *Kearsarge* and *Kentucky* are being delivered. Two complete sets have been received, and parts of other sets. One gun is well under way and good progress is being made on the other forgings.

The four completed 12-inch guns for the *Iowa* are still at the yard. One has been proved and the other three will soon go to the proving ground.

Of 10-inch guns one, the so-called Hurst gun, has been completed during the year.

Of 8-inch guns, 17 have been completed within the past twelve months, 16 of them being for the *Brooklyn* and *Iowa*. Under existing orders there are but eight more guns of this caliber to be made, namely, those for the *Kentucky* and *Kearsarge*, and work upon them is advancing rapidly.

The 8-inch nickel-steel gun, designed to be built of three forgings, to be assembled with the Sellers furnace, remains in an unfinished state. An attempt was recently made, under the direction of Mr. Sellers's representative, to remove the tube, but resulted in failure.

The *Brooklyn's* 8-inch guns have been shipped to Cramp's shipyard to be installed on the vessel. Those for the *Iowa* are complete and are being proved.

Six-inch guns.—One of the *Chicago's* 30-caliber 6-inch guns has been converted into a rapid-firing gun with the Fletcher type of breech mechanism, and has been fired several times.

Five-inch guns.—Within the past twelve months 14 guns of this caliber have been completed, and 34 more are assembled and in a very advanced state.

Four-inch guns.—Thirty-seven have been completed during the past year, and 24 more are in an advanced state. There are 15 others in process of manufacture, less advanced.

Three-inch guns.—Forgings for fifty 3-inch field guns have been received. The first three guns have been completed, and the type gun tested. Work on the remaining guns is well advanced, they all being rifled and chambered.

Unless other forgings are soon procured there will be lack of work for a considerable part of the gun-shop machinery.

Guns completed and in progress.

	Completed Sept. 15, 1895.	Completed since Sept. 15, 1895.	Assembled and nearly completed.	Partly assembled.	Forgings in hand and ordered.
13-inch, 35 calibers	12			1	7
12-inch, 35 calibers	11	2			
10-inch:					
30 calibers	23	1			
35 calibers	2				
8-inch:					
30 calibers	5				
35 calibers	44	17	8		
40 calibers	2				
6-inch:					
30 calibers	122				
35 calibers	6				
40 calibers	12				
5-inch:					
30 calibers	2				
40 calibers	60	14	34		
4-inch:					
40 calibers	68	37	24	10	5

No marked changes have been made in breech mechanisms during the past year, but the new 13-inch guns will have some improvements in respect to breech mechanism over those now in service.

MOUNTS.

Thirteen-inch turret mounts.—Five mounts for guns of this caliber have been completed. A new design for a spring-return mount is being developed for this caliber.

Twelve-inch turret mounts.—One spring-return mount for guns of this caliber has been completed and satisfactorily tested for the *Iowa*, and the castings are on hand for the remaining three mounts for that vessel, and work on them is being pushed to completion.

Ten-inch turret mounts.—A Mark II mount has been made for the Naval Proving Ground.

Eight-inch turret mounts.—Thirty-six have been completed. Drawings are well advanced for the 8-inch turret mounts of the *Kearsarge* and *Kentucky*, and the patterns for the steel castings will soon be begun.

Six-inch R. F. mounts.—Nine have been completed. A new design of a 6-inch pedestal mount for R. F. guns has been completed, and patterns are being made for the steel castings, and a type carriage will be begun as soon as the castings are received. There are 59 of these mounts ordered, 17 of which are for auxiliary cruisers.

Five-inch mounts.—Twelve pedestal mounts for 5-inch R. F. guns have been completed and shipped to the *Brooklyn*. There are orders in the shops to manufacture 72 more, 20 of which are for a reserve supply for ships of the Navy and 35 for auxiliary cruisers.

Four-inch mounts.—Four have been completed for the American Ordnance Company. Two Mark II mounts have been converted into Mark III, and two R. F. mounts, Mark III, have been manufactured. Two of a lot of 40 pedestal mounts have been completed, and 24 more are nearly so. In addition to the 40 referred to, orders are in the shops for the manufacture of 20 others of the same type for auxiliary cruisers.

Three-inch field mounts.—A type mount for this caliber has been developed and tested; 49 more are to be manufactured, for which the material is now being procured.

Mounts completed and in progress, etc., main battery.

	Completed Sept. 15, 1895.	Completed Sept. 15, 1896.	Nearly completed Sept. 15, 1896.	Partly completed Sept. 15, 1896.	Others to be manufactured.
13-inch turret	7	5	.....	.....	8
12-inch turret	8	1	.....	3	.....
10-inch turret	18	1	.....	.....	.....
8-inch:					
Turret	8	32	8	.....	8
C. P	18	.....	.....	.....	.....
6-inch:					
Broadside	21	.....	.....	.....	.....
C. P	101	.....	.....	.....	.....
R. F	2	6	.....	.....	59
5-inch:					
R. F	69	.....	.....	.....	.....
Pedestal	0	13	.....	.....	72
4-inch:					
R. F	73	*a* 4	.....	.....	.....
Pedestal	0	2	24	12	51
3-inch field	0	1	.....	.....	49

a For Hotchkiss Ordnance Company.

Of the above "others to be manufactured," twenty 5-inch pedestal mounts are for reserve supply for ships of the Navy, thirty-five 5-inch pedestal mounts for guns of auxiliary cruisers, twenty 4-inch pedestal mounts for guns of auxiliary cruisers, seventeen 6-inch pedestal mounts for guns of auxiliary cruisers.

The following mounts for guns of secondary batteries and other articles have been manufactured:

1-pounder recoil mounts	9
3-pounder recoil mounts	2
6-pounder recoil mounts	72
6-pounder recoil mounts (nearly completed)	30
1-pounder subcaliber attachments	6
Torpedo mounts (well advanced)	18
6-pounder rail sockets	10
Gun locks	23

AMMUNITION HOISTS.

Four electric hoists for the 8-inch turrets of the *Massachusetts* and four for the *Oregon* have been made and supplied to those vessels. Eight improved hoists have been made for the *Brooklyn* and eight are in progress for the *Iowa*. An improved 12-inch hydraulic hoist is also being made for each of the four 12-inch guns of the *Iowa*.

Considerable experimental work has been done on a mechanical rammer for 12-inch turret guns to be driven by electric motor or handpower. The device is now nearly completed, the numerous difficulties that presented themselves having been overcome.

ARTICLES MANUFACTURED.

Cartridge bags	20,956
Gas-check pads	125
Gun and carriage covers	107
Gun-breech covers	30
Gun-muzzle bags	14
Sponge covers, sheepskin	173
Sponge caps, canvas	322
Gun and magazine swabs	64
Lock laniards	70
Magazine dresses	60
Pairs magazine shoes	66
Cutlass scabbards	640

Single sticks	702
Sets leather packing for gun mounts	36
Schenkl percussion fuses	6,000
Base percussion fuses	8,055
Navy time fuses	1,500
Primers, external, friction	1,250
Primers, steel, vent sealing	500

And a number of sponge buckets, shell slings, division bags, check and drag ropes, and miscellaneous fittings for ammunition hoists and equipments for ships.

The ordnance outfits of the following ships were completed and shipped: *Monadnock*, *Indiana*, *Oregon*, *Massachusetts*, *Terror*, *Puritan*, and *Katahdin*. The outfit of the *Brooklyn* is completed and now being shipped. The outfits of the *Nashville*, *Wilmington*, and *Helena* are well advanced toward completion, and that of the *Iowa* is well in hand.

The following guns have been shipped:

13-inch	7	6-inch	5
12-inch	2	5-inch	1
8-inch	24	4-inch	8

The 5-inch guns of the *Brooklyn* are ready and awaiting shipment.

The following mounts have been shipped:

13-inch	6	6-inch	1
12-inch	1	5-inch	1
10-inch	1	4-inch	8
8-inch	24		

The pivot stands for *Brooklyn's* 5-inch guns have also been shipped, and top carriages are ready to follow.

There have also been shipped:

6-pounder mounts	73	6-pounder cage stands	24
1-pounder mounts	6	1-pounder cage stands	14
Top-mounts for 1-pounder	6	1-pounder subcaliber mounts	13
Rail sockets for 1-pounder	10		

Freight as follows has been shipped:

	Pounds.
To ships completed and commissioned	3,032,813
To ships not completed	772,368
To ships refitting	1,798
To ships in commission	35,735
To navy-yards and stations	662,315
To naval militia	4,714
To Revenue-Cutter Service	916
Miscellaneous	11,417
Total	[1] 4,522,076

In the foundry 434,862 pounds of brass castings have been made and 795,339 pounds of iron castings.

The following cast-iron shell have been manufactured:

3-inch	50	8-inch	30
4-inch	824	10-inch	27
5-inch	147	12-inch	18
6-inch	1,108	13-inch	26

In addition, 220 10-inch shell have been finished; 439 armor-piercing shell of various calibers have been banded, and 1,352 common forged steel shell.

Nine shields for 4-inch guns have been manufactured, and three for 5-inch guns (four of the 4-inch being for the Hotchkiss Ordnance Company).

[1] Equal to 2,018 tons.

The following cage stands have been made: Fifteen 6-pounders and one 3-pounder.

Arrangements for ammunition handling rooms have been manufactured for the *Puritan* and *Iowa* and six for 13-inch turret mounts of battle ships *Oregon*, *Massachusetts*, and *Indiana*.

REPAIRS, ETC.

The alterations to be made to the foundry are now in progress, and a large portion of the building is dismantled, and our facilities for the present are much crippled.

This Department has prepared the specifications for new cupolas and blowers, electric crane and runway, jib cranes, elevators, etc., and the articles required have been advertised for.

The alterations to the northwest corner of the gun-carriage shop are also in progress and necessitated the abandonment of that part of the building until the improvements are completed. All the machinery had to be removed and the most important erected temporarily elsewhere, very much overcrowding some of the shops.

The tool-making machinery has been removed and set up in a small building formerly used as a projectile shop, which makes a satisfactory and permanent arrangement.

Considerable saving in power has been effected by new connections of shafting, etc., and by making additional steam connections to the main boiler plant. The boiler power has been economized to a considerable extent, resulting in a large saving of fuel.

The average monthly working force has been 823½.

IMPROVEMENTS, ETC.

A building for the stowage of finished guns and mounts is greatly needed, there being at present no provision for such purpose. Both guns and mounts are too costly and too subject to injury to be left in the gun park, and guns and mounts for auxiliary cruisers and for reserve for the Navy must be properly stored and cared for. Data for such a building have been prepared and submitted to the Bureau of Yards and Docks.

A suitable loft for the stowage of patterns is also needed, and this also has been brought to the attention of the same Bureau.

To keep pace with new work and with the march of improvement, a moderate sum is needed annually for the purchase of new machinery and tools, and estimates as follows were submitted in the annual schedules:

For breech mechanism and gun-carriage shops	$20,000
For pattern shop	6,000
For improvement of the erecting shop	10,000

SEAMEN GUNNERS.

Number in class September 1, 1895	26
Number reported during the year	63
Number transferred to torpedo station	50
Number dropped (unsatisfactory)	2
Number dropped (misconduct)	7
Number dismissed	4
Number deserted	1
Number transferred at own request to gun shop	1
Number discharged by purchase	1
Number in class August 31, 1896	23
Total	89

During the year the course approved by the Bureau of Navigation December 22, 1894, has been followed, new subjects, caused by improvement in ordnance, being each placed under its proper heading. Those ordnance appliances which have been withdrawn from service have been dropped as subjects of study.

The conduct of a large majority of the men in the class during the year has been excellent. The sanitary condition of the quarters will, no doubt, be reported on by the medical officer of the yard. At the beginning of the summer a number of sanitary rules were put in force and have been enforced to date, with the hope that thereby there would be prevented a repetition of the general illness of the class last year. This year the health of the class has been better than it was in 1895, but the climatic conditions might have been different.

It is recommended that, if practicable, a gunner who has taken this course be ordered here as an assistant to the officer in charge.

Ensign G. W. Williams, U. S. N., has for the past nine months been in charge of the class.

OFFICERS ON DUTY.

Commander T. F. Jewell, superintendent, was detached from duty February 10, 1896, and was temporarily succeeded by Lieut. Commander E. H. C. Leutze until April 8, 1896, when he was relieved by Commander Charles O'Neil.

The following officers now attached to the yard are performing duty at the gun factory:

Lieut. Commander W. H. Reeder, senior member board of inspection.
Lieut. J. H. Moore, general outside work, matters in connection with the Proving Ground, care and installation of machinery, etc.
Lieut. F. E. Greene, 6 and 8 inch guns, mounts, and accessories.
Lieut. C. J. Badger, secondary mounts, field guns and mounts, etc.
Lieut. R. F. Nicholson, 10, 12, and 13 inch guns, mounts, and accessories.
Lieut. T. S. Rodgers, 4 and 5 inch guns, mounts, and accessories.
Lieut. J. Strauss, in charge of drafting room.
Ensign G. W. Williams, in charge of seamen under instruction.
Gunner J. J. Walsh, in charge of Bellevue magazine and of shipment of ships' outfits, manufacture of cartridge bags and miscellaneous articles.

The following officers have been detached during the year: Lieut. Commander E. H. C. Leutze, Lieut. Commander Andrew Dunlap, Lieut. Commander G. Blocklinger, Lieut. Commander T. M. Potts, Ensign B. C. Decker, Ensign H. K. Benham.

The chemical laboratory is still in charge of Mr. Joseph Westesson, chemist.

CHARLES O'NEIL,
Commander, U. S. N., Superintendent Naval Gun Factory.

COMMANDANT, NAVY-YARD, *Washington, D. C.*

D.

ANNUAL REPORT OF NAVAL TORPEDO STATION, 1896.

NAVAL TORPEDO STATION,
Naval Station, Newport, R. I., September 23, 1896.

SIR: I have the honor to make the following report of the condition of this station, of the work done during the past year, and of that now in progress:

The following changes have occurred in the personnel since the date of the last report:

Detached.—Asst. Surg. J. M. Moore, October 4, 1895; Lieut.

Commander Duncan Kennedy, October 8, 1895; Lieut. S. S. Wood, January 1, 1896; Surg. J. M. Steele, January 31, 1896; Lieut. E. E. Capehart, April 13, 1896; Gunner Charles Morgan, May 14, 1896, and Acting Gunner G. L. Mallery, June 13, 1896.

Reported for duty.—Asst. Surg. J. M. Moore, September 16, 1895; Surg. J. M. Steele, October 4, 1895; Lieut. Commander W. I. Moore, October 23, 1895; Lieut. S. S. Wood, October 24, 1895; Ensign H. J. Ziegemeier, October 25, 1895; Surg. M. H. Simons, February 4, 1896; Acting Gunner G. L. Mallery, May 23, 1896, and Acting Gunner F. J. Applegate, June 10, 1896.

The present assignment of duty is as follows:

Commander G. A. Converse: Inspector of ordnance, in charge of station.
Lieut. Commander W. I. Moore: General charge of grounds, tug, boats, wharves, etc.; supervision of enlisted men, including the detail of seamen under instruction.
Lieut. Hamilton Hutchins: Charge of electrical laboratory, dynamo room, and experimental electrical work; charge of torpedo-assembling room; inspection of outfits, magazines, and manufactured explosives; instructor in practical torpedo work.
Lieut. J. B. Bernadou: Charge of manufacture of high explosives.
Ensign H. J. Ziegemeier: Charge of manufacture of fuses, detonators, primers, etc.; instructor in diving; assistant instructor in practical torpedo work; immediate charge of *Stiletto*.
Surg. M. H. Simons: Medical officer.
Gunner F. J. Applegate: Assistant to inspector of outfits, magazines, etc.
H. F. Brown: Chemist.
Karl Hedburg: Draftsman.

BUILDINGS, WHARVES, BOATS, PLANT, ETC.

Buildings.—The buildings generally are in a fair condition. Considerable work in repointing and replacing defective material has been done on the electrical laboratory, general storehouse, magazine, and other brick structures. Such repairs as circumstances and the funds available would permit have been made to the wooden buildings. The coal shed and stable require new floors, repairs to sills, etc. The officers' quarters need minor repairs, particularly to the roofs and flashings about the chimneys and dormer windows.

The building used for offices and quarters by the inspector in charge of the station will at an early date have to be replaced. Originally a one-story wooden building, lightly constructed, and designed for quarters for the officers garrisoning Fort Walcott, it was enlarged and a heavy Mansard roof added twenty-five years ago—when the island was turned over to the Navy. Exposed as it is to the full force of the violent winter gales, it has developed signs of weakness, and vibrates to such an extent as to cause at times considerable apprehension as to its safety. The general arrangement of the building is admirably adapted to the purposes for which it is used, and the present site is the only one available on the island. It is respectfully recommended that the building be replaced by one of similar design, if an appropriation can be obtained.

The necessity of providing new buildings to be used for carpenter and paint shops was referred to in my last report, but owing to the want of an available site no steps have been taken toward their erection.

Wharves.—The main wharf and bulkheads need considerable repairs to piling, caps, and deck. The ferry wharf is in a fair condition, having been strengthened at its outer end by piles. The landing floats, both at the station and in the city, are in good condition, requiring only cleaning and painting.

An inclosure has been made north of the main wharf by building two bulkheads, one extending 100 feet to the northward, and the other 70 feet to the westward from the northern extremity of the former.

These bulkheads, with the boathouse and dock, form an inclosure practically 100 feet square, which has been dredged to a uniform depth of 6 feet at low tide, thereby forming a convenient basin in which to moor the *Stiletto* and such torpedo launches as may be attached to the station.

The firing stage, located on one side of the inclosure, has been fitted with convenient appliances for handling the torpedoes used by the boats moored therein.

Boathouses.—The boathouses are in fair condition and need few or no repairs.

Marine railways.—The ways at the north end of the island are in excellent condition, but the small ways near the main wharf need considerable repairs.

A steam capstan has been installed for use with the large ways, thereby expediting the work of hauling out boats and obviating the necessity of using the per diem employees for that purpose.

Tug Fortune.—This tug was condemned by survey in March, 1895. At present she is used as quarters for the seamen gunners, but as it is impossible to raise steam in her boilers sufficient even for heating purposes, the vessel is damp in wet weather, and will be practically uninhabitable in cold.

Under the orders of the Department, the tug *Leyden* is to replace the *Fortune* as soon as repairs now in progress can be completed. It is desirable that the exchange take place before the advent of cold weather.

Ferry launches.—The ferry launch *Wave* has been fitted with a new Scotch boiler, and is now in excellent condition. This boiler, being much shorter than that formerly used, gives increased space in the fire room, which was much needed. The performance of the new boiler has been most satisfactory, and will result in a great economy of fuel.

The ferry launch *Billow* is at present undergoing repairs. A new boiler will be provided for this boat at an early date, as the present one is practically worn out.

Other launches.—The launches *Ripple* and *Spray* are in fair condition, though neither fulfills the requirements of a working launch. Being open boats, with pipes exposed, it is not possible to use either during the winter months. A launch, suitably decked in and of good carrying capacity, is much needed for the transfer of freight and stores and work of a like nature.

The *Success*, used as a boarding boat, has been thoroughly overhauled and repaired and is now in excellent condition.

Plant.—The machinery, tools, and general plant are in good condition. Four lathes and two upright drills have been added to the machine shop during the past year, and several more are needed for the increased amount of work now in progress.

Boilers.—The main boilers are in good condition and have required but minor repairs during the past year, which is believed to be due to the use of pure water. At present there are two 50-horsepower externally fired horizontal tubular boilers, carrying a steam pressure of 65 pounds only, and one 75-horsepower Babcock & Wilcox boiler, capable of maintaining a pressure of 100 pounds. The establishment of the smokeless-powder plant has increased the amount of steam required for driving machinery and drying purposes to such an extent as to render it necessary to enlarge the boiler capacity of the station as soon as practicable. It is therefore recommended that the two smaller boilers now in use be replaced by two boilers of the Babcock & Wilcox type of greater capacity

and capable of carrying a higher steam pressure, and an estimate for this purpose has been submitted.

Instruments.—Such additions have been made to the chemical instruments and apparatus as have been found necessary for purposes of investigation. Owing to the want of available funds, no electrical apparatus of importance has been purchased during the past year.

Lighting system.—During the year a marine dynamo of the most recent type has been installed, and a switchboard, similar in design to that now furnished to our large vessels, has been put in. The engine of the dynamo requires constant watching, but with proper care runs almost noiselessly, governs well, and allows a large variation in boiler pressure. On a recent occasion this dynamo operated with perfect steadiness nearly the entire incandescent system of the station, together with two search lights—using hand lamps with dead resistance in each search-light circuit for steadying the light.

The 40-ampere Edison dynamo, purchased some eight years ago, has been belted up to the main line shafting of the machine shop and is useful during the dark days for lighting the machine shop and other buildings in its vicinity, and also for supplying portable lights for use in repairing boilers and other similar work. These additions to the plant have greatly increased its efficiency.

The Westinghouse engine needs thorough overhauling of its bearings and cranks.

The Callender underground cables, laid in 1887, and which supply the inspector's and officers' quarters, are still in good condition, although of not sufficient capacity to meet all requirements.

Water system.—The water service during the past year has been most satisfactory, no accidents having occurred to the mains crossing the harbor, either from freezing or the anchoring of vessels in the vicinity. During the cold weather it was deemed prudent to keep one of the pipes free from water, and this can now be easily accomplished at any time by means of connections which have been provided to the accumulators used in charging automobile torpedoes. By turning off the water in the city and opening a pet-cock at that end of the line all water in the pipe is quickly driven out by the use of the high-pressure air contained in the accumulator.

Fire system.—The fire system connected to the city service is in good condition; but it has been deemed desirable to double the number of standpipes and hose attachments in many of the buildings, and the material is now on hand for this purpose.

The fire engine and its connections are in good condition, with the exception of the salt-water suction, which was broken by a dredge a few weeks ago. Temporary repairs have been effected, and the material necessary to permanently renew the damaged portions has been required for.

TORPEDO BOATS.

Stiletto.—The *Stiletto* is in good condition, and has been in constant service during the past year. In addition to the experimental work of the station, the instruction of officers and men in the handling of the Howell torpedo, the boat has made several trips to New York for the purpose of conveying explosives, recently having left here in the morning and delivered at Fort Wadsworth and South Amboy, N. J., 4,000 pounds of smokeless powder within twelve hours—a remarkable trip for a boat of this size.

Torpedo launch No. 1.—This boat, originally built for the battle ship

Maine, was received at this station May 8, 1896, having been towed from New York by the *Stiletto*. She is used entirely for the instruction of officers and men in handling the Whitehead torpedo, and is of great service. The excellent practice made from the bow tube of this boat when going at a speed of upwards of 10 knots has been the subject of frequent comment.

Cushing.—The *Cushing*, having undergone extensive repairs at the Washington Navy-Yard, did not reach this station until August 6, since which time she has been employed in experimental work and in the instruction of officers in practical torpedo work.

AIR COMPRESSOR ROOM.

This room is at present equipped with 1 Whitehead compressor, manufactured by the E. W. Bliss Company, 1 Brotherhood compressor, and 1 Bliss compressor, Type II. These compressors are in frequent use and have given general satisfaction. The system of piping (nearly 700 feet in length) leading from this room to the testing station on the main dock, which has been installed upwards of two years, has not yet developed the slightest leak, although frequently subjected to pressures up to 1,700 pounds per square inch. It is believed that piping and joints of the description here in use might be employed to advantage in many places on board ship.

TORPEDO-TESTING STATION.

Two accumulators, one of Type II and one of Type III, have recently been installed at the testing station on the dock, thereby greatly increasing the facilities for charging torpedoes for test and exercise, and affording a supply of air sufficiently large to run motors when desired.

AUTOMOBILE TORPEDOES.

Whitehead.—The receipts, issues, and disposition of these torpedoes have been as follows:

	Mark I.		Mark II.	
Total number received to date (a)	.....	100	.....	50
Expended prior to September 8, 1895	64		1	
Expended subsequent to September 8, 1895	28		21	
In use at station for instruction and experiment	4	96	2	24
Remaining	.....	4	.....	26

a None received since last report.

No Whitehead torpedoes have been lost from the station during the past year.

The returns from cruising ships show that the following have been lost:

	Mark I.	Mark II.
New York	1	.....
Raleigh	1	.....
Indiana	.....	1
Total	2	1

Howell.—The receipts, issues, and disposition of these torpedoes have been as follows:

	Mark I.	
Total number received		50
Expended prior to September 8, 1895	12	
Expended subsequent to September 8, 1895	4	
In use at station for instruction and experiment	2	18
Remaining		32

No Howell torpedoes have been lost from the station during the past year.

The returns from cruising ships show that the following have been lost or wrecked beyond repair:

	Mark I.
Marblehead	1
Raleigh	1
Detroit	1
Total	3

SPAR TORPEDOES.

As the spar torpedo is no longer issued to cruising vessels and the number of complete outfits on hand being sufficient to meet any probable emergency, further manufacture has been discontinued.

ACCESSORIES FOR AUTOMOBILE TORPEDOES.

Such accessories, spare parts, appliances for transporting, etc., of automobile torpedoes as have been required for the outfits of the various vessels have been manufactured and supplied.

ISSUES TO THE SERVICE.

Automobile torpedoes.—During the past year the following vessels have been supplied with automobile torpedoes and their accessories:

	Howell.	Whitehead.
Lancaster		2
Maine		8
Indiana		10
Oregon		10
Massachusetts		10
Texas		8
Bancroft	1	
Cincinnati	1	
Detroit	1	
New York		1
Stiletto	1	
Total	4	49

Parts of outfits, to supply deficiencies, have been issued to the *Cushing*, *Marblehead*, *Cincinnati*, *Indiana*, *Raleigh*, *New York*, and *Montgomery*.

Spar torpedoes.—Articles of the spar-torpedo outfit, to be used in blowing up wrecks and for similar purposes, have been issued to the *Dolphin*, *Fern*, *Monadnock*, *Philadelphia*, California naval militia, and to the Mare Island Navy-Yard.

MANUFACTURES.

The various articles composing torpedo outfits have been manufactured in sufficient quantities to meet all requirements during the past year; but it has not been possible to accumulate any for stock. It is proposed, however, to keep a sufficient number on hand in future to meet all probable demands.

Gun-firing batteries and attachments have been made as required, and preparations for making firing keys, etc., have been completed.

Electric and percussion vent-sealing primers have received much attention, and new and improved machines specially adapted to their manufacture have been installed.

Base fuses for minor caliber projectiles are now being turned out in quantities sufficient to meet the present demands, and the output will be increased as soon as certain contemplated modifications in the machines now used for their manufacture can be effected.

Considerable machinery for the new smokeless-powder plant has been completed, and more is now in process of construction.

The working force in the machine shop has been considerably increased during the past year.

INSTALLATION OF TORPEDO OUTFITS.

During the past year the *Lancaster*, *Maine*, *Indiana*, *Massachusetts*, and *Texas* have been at this station to receive their automobile torpedo outfits. These outfits have invariably been prepared in advance, and sent on board the vessels as soon as they were ready to receive them. The installation of the torpedo directors, air plant, etc., has been under the immediate supervision of the torpedo officer of this station. As a rule the work can be completed in three days; but if defects are developed in the air system (as has happened on several occasions) a longer time is desirable. The necessity of thoroughly testing the efficiency of the apparatus after it is finally installed has been repeatedly demonstrated, and it is earnestly recommended that in future vessels may be permitted to remain at this station until any defects which may have developed in these tests can be repaired and everything put in a satisfactory working condition.

GENERAL EXPERIMENTAL WORK.

Much of the experimental work under consideration at date of last report has been completed, and satisfactory progress has been made with the remainder. Numerous devices applicable to torpedo warfare have been tested, and experiments tending to demonstrate the efficiency, under varying conditions, of many of the appliances now in use have been carried on. Much data has been acquired which will be valuable in developing and perfecting the present torpedo system and in the prosecution of other work of special character in progress at this station.

Special reports on the condition of work on the various subjects classed under this general head have been made to the Bureau from time to time as circumstances required.

ELECTRICAL LABORATORY AND DYNAMO ROOM.

The principal work of the electrical laboratory has consisted in the care and preservation of the electrical plant, including the lighting, telephone, and local signal circuits, and the time-signal system; the

manipulation of chronographs in connection with the determination of velocities of various kinds of powders; the testing of electric cables and other material of a similar nature; the testing of electric primers; the fitting and testing of gun-firing batteries for ships; and the instruction of seamen qualifying for seamen gunners.

To provide space for the installation of the new marine dynamo and switchboard, the dynamo room has been cleared of obsolete types of engines and dynamos, with the exception of the Brotherhood-Gramme plant, which, although it has been in service fifteen years, is still occasionally used for search-light practice.

Many of the underground wires and cables have been in use for a long time, and the signal circuits should be renewed at an early date.

The time-signal system has been generally satisfactory, few or no failures being attributable to the apparatus at this station.

The following vessels have been supplied with gun-firing batteries during the past year: *Lancaster*, *Maine*, *Indiana*, *Monadnock*, *Cincinnati*, *Massachusetts*, and *Oregon*.

CHEMICAL LABORATORY.

The greater part of the work of this department has been of a routine nature, and, as usual, has centered chiefly about the manufacture of gun cotton and smokeless powder.

There have been submitted 12 monthly reports of progress, 39 special reports on various topics, and 339 memoranda, relating principally to chemical tests of material and finished product.

The general work of the department may be briefly summarized as follows:

Torpedo station gun cotton.—A large amount of experimental and routine work has been done in connection with the new gun-cotton factory. Numerous tests of samples of gun cotton, taken at various points during the manufacture, have indicated the proper duration of the various processes, and have proven that the present plant is capable of making gun cotton of most excellent quality, containing 13.3 per cent of nitrogen and no unnitrated cellulose whatever, and giving a stability test at 65.5° C. of over twenty-five minutes.

Materials used in the manufacture of gun cotton.—Chemical examination has been made of 10 samples taken from the 6 tons of specially prepared cotton recently purchased for the manufacture of gun cotton.

Chemical examination has been made of samples of mixed acid for the manufacture of gun cotton from the lots supplied by various manufacturers.

Gun cotton for purchase.—Chemical examination has been made of sample blocks from the compressed Stowmarket gun cotton purchased for experimental use.

Torpedo station smokeless powder.—The chemical examination of finished torpedo station smokeless powder may be summarized as follows: Two partial analyses, 11 stability tests, 7 specific gravity determinations, and 6 determinations of the ignition temperature.

Materials used in the manufacture of smokeless powder.—Heat tests and determinations of the per cent nitrogen and moisture have been made in 117 samples of gun cotton and 36 samples of soluble nitrocellulose for use in the manufacture of smokeless powder.

Chemical examination has been made of samples from lots 2, 3, 4, 5, and 6 of soluble nitrocellulose, supplied by Messrs. E. I. Du Pont, De Nemours & Co.

Chemical examination has been made of samples from 8 lots of acetone,

5 lots of barium nitrate, and 1 lot each of camphor, ethyl ether, and ethyl alcohol.

Specifications have been elaborated for gun cotton, soluble nitrocellulose, ethyl ether, ethyl alcohol, and potassium nitrate.

Numerous lots of nitrohydrocellulose, soluble and insoluble, have been made for experimental use in the manufacture of smokeless powder. The per cent nitrogen has reached the high values of 12.7 per cent in the soluble nitrohydrocellulose and 13.5 per cent in the insoluble nitrohydrocellulose.

Experiments have been made (1) to determine the amount of water which must be added to nitric acid of specific gravity 1.45 in order to reduce its specific gravity to 1.44 and 1.43; (2) the availability for further use of the spent acid from gun-cotton manufacture (*a*) in its original state (*b*) after it has been fortified by the addition of nitric acid.

Fulminate of mercury and detonators.—About 3½ pounds of fulminate of mercury have been manufactured, and 529 exploder bases have been filled.

Calcium phosphide.—No calcium phosphide has been manufactured during the year. The cans on hand have been issued as required. Drawings of a new and greatly improved furnace have been made and submitted.

Explosives found in commerce and those received from abroad.—Complete chemical examination has been made of several lots of rifleite in order (1) to determine the characteristics of the powder made into ammunition by the Winchester Repeating Arms Company for the tests of the Lee rifle; (2) to afford as complete a comparison as possible between the different lots of rifleite at this station.

Chemical examination has been made of several foreign and domestic commercial smokeless powders with a view of determining their component parts; and also of samples of smokeless powder which have shown signs of decomposition for the purpose of determining the cause thereof.

Miscellaneous material.—A large amount of miscellaneous work has been done, including, with others, the following subjects: Weights of .236-caliber cartridges; cylinder oil; lubricating oil; sperm oil; lard oil; linseed oil; zinc white; red lead; sodium carbonate for torpedo outfits; residue of smokeless powders from bores of large-caliber guns; Fehling's solution for the dispensary; barium platinocyanide for the electrical laboratory; paraffining of battery cases.

Water analysis.—Eighteen complete analyses have been made of samples of water from the wells at the torpedo station, Newport service system, and wells on the north end of the island of Rhode Island.

Investigation of chemical methods.—Important investigations have been carried on during the past year. The improved method for determining the ignition temperature of explosives by the use of a platinum capsule, heated in an air bath, has been further elaborated, and accurate and highly satisfactory results have been obtained.

Experiments are being made in order to find the best methods for the determination of the insoluble nitrocellulose and the alkalinity in gun cotton. An extended report is in preparation on the investigations which have been carried on during the past three years in connection with the methods for the chemical examination of gun cotton; based upon the data contained therein, a subsequent report will define the methods proposed for adoption.

Photographing.—Seven negatives have been prepared in the photographic room of the chemical laboratory.

By-products.—A considerable amount of chemical reagents has been recovered from various analytical processes and purified for further use in the laboratory, including ether, alcohol, and ethyl acetate.

GUN-COTTON AND SMOKELESS-POWDER FACTORIES.

The new gun-cotton factories having been completed, and all machinery installed, the manufacture of gun cotton was commenced February 1 last, and has continued without interruption since that date. The buildings have been found to be well suited for the purpose for which they are intended, the machinery is satisfactory, the output equals anticipations as to quantity, and the quality is superior to that formerly produced. The absence of acid fumes in the dipping room conduces greatly to the comfort of the workmen, and the facility with which the acid can be extracted and the cotton immersed renders these operations much less laborious than heretofore.

All of the buildings of the smokeless-powder factory have been completed, and types of the various kinds of machinery, which it is intended to use in the manufacture of the various kinds of powder, have been installed, and are now in successful operation.

As the machines already in use have proved satisfactory, more of the same type are being made in the machine shop, and will in a short time be completed. When these machines have been installed, the capacity of the smokeless-powder factory will equal that of the gun-cotton factory, so that the entire output of gun cotton can be converted into smokeless powder.

In designing the various kinds of machinery and apparatus employed in the manufacture of gun cotton and smokeless powder, care has been taken to provide that the operations which are continuous shall be completed within the working hours (i. e., from 7.30 a. m. to 4.30 p. m.) of a single day; so that if at any time it is desirable to increase the output, it can be practically doubled or trebled by employing a larger number of men and working them in shifts of eight hours each.

GUN-COTTON MAGAZINES.

These magazines are in excellent condition, minor repairs having recently been made to the entrances and windows.

The gun cotton in store has been periodically inspected, and continues to exhibit excellent keeping qualities—no deterioration having been detected.

The quantity of military cotton on hand ready for issue is as follows:

Service blocks made at torpedo station	9,398
Service blocks made by Du Pont	44,865
Total	54,263

Having a weight of 38,968 pounds wet, equivalent to 34,762 pounds dry.

OTHER MAGAZINES.

The smokeless-powder magazine on Rose Island, completed last year, has proved well suited for the purpose for which it was intended, and is sufficiently large to meet all prospective requirements.

The receiving magazine on this island has been repointed and repaired, and is in excellent condition. It is used principally for the temporary stowage of gun cotton or smokeless powder awaiting transfer to Rose Island; but small quantities of various kinds of powders undergoing examination and test or which are likely to be required for immediate use are also stowed therein.

The small magazines used for the stowage of dry gun-cotton primers, detonators, etc., are not well adapted to the purpose and are generally in a poor condition. They should be replaced by new ones as soon as practicable. It is recommended that a number of small magazines be built in the ramparts on the western side of the old fort, at places selected with a view to proper isolation from the neighboring buildings, as soon as circumstances will permit.

EXPLOSIVES.

Gun cotton.—Since February 1 the gun-cotton factory has been running constantly, and all of the output has been manufactured into smokeless powder.

As the amount of military cotton on hand is sufficient to meet probable requirements for some time to come, no molding or final presses for shaping the cotton have yet been set up in the new gun-cotton factory. In view of the fact that gun cotton conforming to the present Navy standard as to quality and dimensions can at any time be procured from private firms in quantities sufficient for probable demands, it is recommended that the presses to be erected at this station be constructed with a view of producing blocks of the forms and shapes required for automobile torpedoes and for naval defense mines.

Smokeless powder.—Only a limited amount of smokeless powder has been produced during the past year, owing to the fact that but a small part of the machinery intended for use in the smokeless-powder factory has yet been completed.

For issue to the service, the manufacture of powder has been confined to that intended for use in the 1-pounder and 6-pounder R. F. guns. For trial at the Proving Ground at Indian Head, several lots designed for use in the 4-inch, 5-inch, and 6-inch R. F. and in the 13-inch B. L. guns have been supplied. In addition to the above, small quantities of powder for the new navy small arm and for bursting charges for projectiles have been made and submitted for trial.

Automobile torpedo warheads.—The custom of keeping on hand, filled and ready for immediate issue, a number of automobile torpedo warheads, sufficient to meet emergency demands, has been adhered to, and whenever this number has been reduced below that fixed upon deficiencies have been made good without delay.

Electric vent-sealing primers.—Much attention has been devoted to the improvement of the electric-vent sealing primer. New and more accurate machinery has been procured, and greater care is now exercised in the various details of manufacture. As a consequence, it is believed that the causes of failures hitherto existing have been practically eliminated. Frequent tests are made during manufacture and a per cent of each lot of finished primers is fired previous to issue to the service. By the results obtained from these tests it is believed that the primers will in future be found to be uniform and reliable.

Percussion vent-sealing primers.—During the past year the manufacture of percussion-vent sealing primers has been commenced at this station. New and improved machinery specially designed for the purpose has been procured, and modifications in the materials heretofore used and in details of manufacture of the primers themselves have been made with a view of obtaining greater certainty of action.

Friction vent-sealing primers.—Under recent instructions these primers, now used only in connection with the discharge of automobile torpedoes, are in future to be manufactured here, and arrangements are being made for this purpose.

Primers of various kinds have been issued to the following vessels during the past year: *Indiana*, *Massachusetts*, *Oregon*, *Maine*, *Texas*, *Cincinnati*, *Raleigh*, *Amphitrite*, *Monadnock*, *Miantonomoh*, and to the Naval Proving Ground.

FULMINATE DETONATORS AND EXPLODERS.

Service detonators.—The stock of detonators has been replenished from time to time to supply deficiencies caused by the current issues.

Exploders for automobile torpedoes.—The quantity of exploders for automobile torpedoes to be kept in stock is based upon the number of filled warheads of automobile torpedoes ready for issue, and an ample supply is always available.

SMOKELESS POWDER.

The systematic development of the K powders referred to in the last report has been continued throughout the present year. The principal problem in this connection, to the solution of which attention has been mainly given, has been to assemble a type set of apparatus and machinery such as will constitute a standard for those to be used in the manufacture of the explosive on a commercial scale. The experimental machinery formerly employed, which was largely made up from apparatus originally designed for other purposes, but refitted and readapted to serve the needs of experimental powder manufacture, has been set aside; the standard plant is now, for the greater part, assembled and located in appropriate buildings. A battery of powder presses, built and designed at this station, is practically completed, while suitable types of mixing and incorporating machinery, well adapted to the special uses for which they are employed, have been purchased in the open market, and are already set up and in successful operation.

Much attention has been given to the installation of suitable devices for the maintenance of a uniform temperature in the gun-cotton dust-drying houses and powder-drying rooms. No automatic devices for the maintenance of uniform temperature have yet been found upon which reliance can be placed. A system of electric alarms, operating through the making and breaking of electric contacts in the heated compartments upon rise or fall of temperatures beyond set limit, and registering at a central point, where a watchman is stationed, has been found to afford ample guaranty of safety, as evinced by its successful operation during the period of nearly a year. A self-recording thermometer, or thermograph, has been used to afford a check upon the care with which supervision of the heat control is maintained.

Satisfactory results have been obtained in the economic manipulation of the colloid material from which the powders are prepared, and it is found that the unavoidable waste may be reduced to a very small percentage of the whole material employed. As a result of a series of experiments with rolls and various forms of dies, it has become possible to prepare films of any required thickness, from that of fifteen one-thousandths inch for the small-arm powder to those of greater dimensions for the larger guns.

Besides the development of one approved type of explosive, experimental work has been in constant progress throughout the year. A quantity of apparatus adapted for research purposes upon a large or small scale is now installed at this station. Present work is given to the investigation of certain phenomena observed in connection with firings of series of shots of smokeless powders and to the study of the

general properties and manner of explosive action of colloid smokeless powders. In this latter connection the comparative study of colloids in general, as prepared from the various forms of nitro and nitrohydro celluloses, with the employment of different colloiding agents—ether, alcohol, and acetone—has received special attention.

The results obtained from firings of ether-alcohol colloids in the 6-inch and the smaller calibers have been satisfactory, and the practical knowledge of how to work economically large masses of ether-alcohol colloids is to be recorded among the results achieved during the present year.

Powders for secondary and main batteries.—The first lot of the new powder put into service was sent afloat in September last. The report of the commander in chief of the North Atlantic Station showed a large percentage of misfires, but stated that the cartridges which exploded gave very satisfactory results as to character of smoke, initial velocity, and strength of charge for range of guns. There was little or no smoke in the open air—only a light, white puff, quickly dissipated.

The rounds that proved misfires were examined at the United States navy-yard, Norfolk, Va., and it was found that the failure to fire was due to the displacement of the ignition charges, placed originally at the base of the cartridge case, between the percussion cap and primary charge. To meet this difficulty an ignition capsule has been devised which combines both the percussion cap and ignition charge, and is of dimensions directly adaptable to the type of cartridge case now issued to the service. This capsule, manufactured by the Winchester Repeating Arms Company, has given ample satisfaction, so that since its adoption no misfire has been recorded out of a large number of rounds fired at the torpedo station.

Favorable results having been obtained from the smaller and medium calibers with the K powders, it was decided to fire a number of rounds of this explosive from a heavy gun. Accordingly, about 1½ tons were manufactured at the station in December last and sent to Indian Head. This trial lot, the first manufactured for the 13-inch gun, developed a velocity of 2,300 foot-seconds within the pressure limit of 15 tons per square inch. Compared to the performance of brown powders of the same date, this represents a ballistic gain of over 25 per cent.

Powders for small arms.—Besides the manufacture of the explosives for the larger calibers, work upon the development of a suitable powder for the 0.236 small arm, to develop the highest velocity corresponding to the lowest pressure, has been in progress throughout the year. Within the pressure limit of 50,000 pounds a velocity of 2,500+ foot seconds has been obtained. The economic production of these powders upon an extended scale is a problem now occupying attention.

VELOCITY RANGES.

The velocity ranges, both for small arms and for minor caliber rapid-fire guns, are in good condition. They are in constant use for the determination of the velocities of different kinds and charges of powder, and have greatly facilitated the development of smokeless powder at this station.

INSTRUCTION.

The instruction of officers qualifying for torpedo officers, and of enlisted men qualifying for seamen gunners, has been continued during the past year.

Owing to the withdrawal of the *Cushing* for repairs in December last, and the nonarrival of torpedo launch No. 2, practical exercises with the Whitehead torpedo afloat were for a period necessarily confined to

such as could be had with torpedo launch No. 1. The *Cushing* returned to this station on the 6th of August, and since that date the usual amount of practical work in connection with the course of instruction has been carried on.

Officers.—Since the date of last report, nine details of officers have taken the regular course in automobile torpedoes. The total number of officers under instruction during the year was 44, of whom 2 were officers of the Marine Corps and 13 belonged to the Naval Militia of the various States. One officer of the Revenue-Marine Service has taken a special course.

The programme of instruction in force during the preceding year has been adhered to, it having been found to satisfactorily fulfill all requirements. The course has covered a period of sixteen working days, and the assignment of time has been as follows:

Day of course.	Forenoon.	Afternoon.
1	Officers' report	Officers' report.
2	Whitehead—description	Whitehead—practical work.
3	do	Do.
4	do	Do.
5	do	Do.
6	do	Whitehead—review.
7	Torpedo tubes, tube mounts, etc	Handling apparatus.
8	Whitehead—firing from wharf	Whitehead—firing from wharf.
9	do	Do.
10	Whitehead—firing from boats	Whitehead—firing from boats.
11	Howell—description	Howell—description.
12	do	Do.
13	Howell—description of Dow motor	Howell—firing from wharf.
14	Howell—firing from boat	Howell—firing from boat.
15	Air compressors	Torpedo directors.
16	Visit to Tiverton	Visit to Tiverton.

Without exception, the officers in attendance have shown great interest in the subject, and have taken advantage of every opportunity to acquire information.

Seamen.—The course of instruction of seamen qualifying for seamen gunners has been somewhat modified during the past year. In compliance with instructions from the Bureau of Navigation additional instruction is now given in the care and management of dynamo engines, and the time allotted has been extended three weeks for this purpose. The schedule of instruction now in force is as follows:

	Weeks.
Electricity:	
Preliminary instruction: Sources of electricity; properties of conductors; measurements of currents and resistances; detection of leaks and defective insulation, and general methods of testing signal and light circuits	2
Study and practical work in dynamo room: Dynamos; incandescent lights; search lights, and general care and preservation of electric-light plants	2
In charge of dynamo room	4
Night watches in charge of dynamo according to detail.	
High-speed engines:	
General instruction in the care and manipulation of dynamo engines	3
Night watches in charge of dynamo engines according to detail.	
Torpedoes:	
Preliminary instruction: Gun-cotton charges and primers; detonators; exploders, etc.; preparation of torpedoes for service; practical exercises	3
General study: Care and preservation of torpedoes and appliances; uses of articles composing automobile torpedo outfits; practical work disassembling and assembling automobile torpedoes	4
Practical torpedo work afloat	1
General review and examination	1
Total	20

Diving.—Men physically qualified, who so desire, are retained for a further period of three weeks for practical instruction in diving and in care of diving apparatus.

The routine of instruction was interrupted during the year, no seamen having reported from the 15th of October, 1895, to the 18th of January, 1896; since which date, however, an unusually large number have arrived. It would be of great advantage to the men under instruction and to the station if the details could be so arranged that five or six men would report each month, thus rendering it possible to carry on the instruction continuously and systematically.

During the year 51 seamen and apprentices have been under instruction. Of these, 26 have qualified as seamen gunners and been transferred to the general service, 4 have been discharged by reason of expiration of enlistment, 1 has been transferred to general service without qualifying, and 20 are at present under instruction.

As a rule the men are intelligent, well behaved, and exhibit great interest in the subjects taught them.

MANUALS, ETC.

The work of preparing manuals, drill books, etc., has been continued during the past year. The present condition of this work is as follows:

Finished and issued to ships: Whitehead Torpedo Drill Book.

Printed and now being bound: Description of the Howell Torpedo.

Finished and submitted for approval: Notes on Whitehead Torpedo, Mark II.

In preparation: Drill Book, Howell Torpedo; Nomenclature and Plates of Tubes, Tube Mounts, etc., Howell Torpedo.

LIBRARY.

During the year 186 volumes have been added to the library, making a total of 4,042.

The library has been improved by the addition of shelves; and metal ceilings have replaced the plaster ones, which were in very bad condition. Much more room is still needed for library purposes.

EXTENSION OF SEA WALL.

The sum of $15,000 having been specifically appropriated for the extension of the sea wall at this station, work was commenced on the west side of the island early in July, and satisfactory progress is being made.

Arrangements have been completed by which work will begin on October 1 on the northeast side of the island. Commencing at a point 50 feet south of the main boathouse, it is proposed to run a wall 70 feet to the eastward, and from the extremity of this, in a southerly direction, to a point near where the permanent dock joins the mainland, thus inclosing the mud flats north of the machine shop, which are now bare at low tide. This space, when filled in, will have an area of upward of 3,000 square feet admirably adapted to building sites, and will afford ample room for the additional storehouses, carpenter shop, paint shop, etc., which are much needed.

SANITARY CONDITION.

The sanitary condition of the island is good. No contagious or infectious disease due to local conditions has occurred during the year.

Very respectfully submitted.

G. A. CONVERSE,
Commander, United States Navy,
Inspector of Ordnance, in Charge Torpedo Station.

CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

E.

ANNUAL REPORT OF THE INSPECTOR OF ORDNANCE, HARTFORD, CONN.

OFFICE OF INSPECTOR OF ORDNANCE,
Hartford, Conn., July 1, 1896.

SIR: In obedience to the Bureau's orders, I have the honor to submit the following report on the manufacture and inspection of ordnance material within the district under my charge, and on the miscellaneous work of the office for the year ending June 30, 1896:

The district embraces the following places of manufacture:

A. *American Projectile Company, Lynn, Mass.*—Projectiles and time fuses. This concern is now merged in the American Ordnance Company.

B. *Winchester Repeating Arms Company, New Haven, Conn.*—Subcontractors for Hotchkiss ammunition; manufacturers of large caliber cartridge cases, minor caliber rapid-fire ammunition, and small-arm ammunition of all kinds; contractors for the supply of rifles to the Navy.

C. *Union Metallic Cartridge Company, Bridgeport, Conn.*—Subcontractors for Driggs ammunition; manufacturers of small-arm ammunition and cartridge cases for rapid-fire guns.

D. *Hotchkiss Ordnance Company, Providence, R. I.*—Mounts for Hotchkiss rapid-fire guns; field carriages, limbers, and drill cartridges. This company is now merged in the American Ordnance Company and the shops have been removed to Bridgeport, Conn.

E. *Pratt & Whitney Company, Hartford, Conn.*—Subcontractors for Hotchkiss rapid-fire guns, manufacturers of gauges, etc.

F. *Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn.*—Revolvers and automatic machine guns.

G. *Bridgeport Gun Implement Company, Bridgeport, Conn.*—Cleaning cords for navy rifle.

H. *J. B. Chapman & Co., Springfield, Mass.*—Powder tanks.

I. *Henry A. Brown, Springfield, Mass.*—Revolver holsters and cartridge boxes.

K. *T. C. Orndorff, Worcester, Mass.*—Woven belts.

L. *William H. Wiley & Son, Hartford, Conn.*—Leggings.

M. *Remington Arms Company, Ilion, N. Y.*—Bayonets.

N. *American Ordnance Company, Bridgeport, Conn., and Lynn, Mass.*—Hotchkiss and Driggs rapid-fire guns, projectiles of all kinds, gun mounts, field carriages, limbers, etc. This company is a consolidation of the Driggs and Hotchkiss Ordnance Companies and the American Projectile Company.

Civilian subinspectors are employed, as follows:

At the Lynn shops of the American Ordnance Company	1
At the Winchester Repeating Arms Company	2
At the Union Metallic Cartridge Company	1
At the shops of J. B. Chapman & Co	1

A helper for clerical and inspection work is also employed in the inspector's office at Hartford.

This office, which has been at the Pratt & Whitney Company's works for some years, was, on the 1st of May, 1896, removed to the premises of the Colt's Patent Fire Arms Manufacturing Company, the termination of the contract between the former concern and the Hotchkiss Ordnance Company having transferred elsewhere the rapid-fire gun work.

In the following table, Column I contains the quantities of the several items ordered previous to July 1, 1895, and remaining undelivered at that date; Column II shows the orders for the fiscal year just closed; Column III the year's deliveries; Column IV material undelivered at this date:

Material.	I.	II.	III.	IV.
A.—American Projectile Company.				
5-inch steel shell	.....	36	36	.....
4-inch steel shell	.....	181	181	.....
6-pounder steel shell	7,000	50,100	9,100	48,000
6-inch wrought-steel shrapnel	500	253	753	.....
5-inch wrought-steel shrapnel	.....	39	39	.....
4-inch wrought-steel shrapnel	.....	123	123	.....
3-inch fused shrapnel	.....	5,000	.....	5,000
Point time fuses for shrapnel	4,000	.....	4,000	.....
Time-fuse cutters	.....	100	100	.....
B.—Winchester Repeating Arms Company.				
(a) *Company's material.*				
6-inch cartridge cases	1,573	.....	1,573	.....
5-inch cartridge cases	.....	3,000	200	2,800
3-inch cartridge cases	2,912	3,500	74	6,338
6-inch cartridge cases, aluminum bronze	10	.....	.....	(*a*)
6-millimeter cartridge cases, aluminum bronze	900	.....	.....	(*a*)
6-inch mouth cups	1,944	.....	1,944	.....
6-millimeter cartridges	.....	505,000	5,000	500,000
6-millimeter cartridge cases	.....	1,500	1,500	.....
6-millimeter bullets	.....	1,500	1,500	.....
.45-caliber ball cartridges	49,800	2,000	51,800	.....
.45-caliber blank cartridges	4,500	2,000	6,500	.....
.45-caliber dummy cartridges	1,000	.....	1,000	.....
.38-caliber ball cartridges	.....	2,000	2,000	.....
.45-caliber reloading tools	1	1	2	.....
6-millimeter barrels and receivers	.....	3	3	.....
Straight-pull rifles	.....	10,000	.....	10,000
Rifle slings	.....	10,000	.....	10,000
Electric primers	.....	10,033	10,033	.....
R. F. primers	.....	50,500	50,500	.....
2½ primers	.....	30,000	30,000	.....
Long R. F. primers	.....	11,412	.....	11,412
Long electric primers	.....	26	26	.....
Model navy bayonet	.....	1	1	.....
(b) *For Hotchkiss Ordnance Company.*				
6-pounder common loaded rounds	.....	396	396	.....
6-pounder wads	.....	1,500	1,500	.....
1-pounder common loaded rounds	.....	300	300	.....
1-pounder canister loaded rounds	.....	180	180	.....
1-pounder saluting rounds	.....	300	300	.....
(c) *For Driggs Ordnance Company.*				
6-pounder cartridge cases	.....	16,000	16,000	.....
1-pounder heavy cartridge cases	.....	13,500	13,500	.....
C.—Union Metallic Cartridge Company.				
(a) *Driggs ammunition.*				
6-pounder loaded rounds, steel shell	3,000	.....	3,000	.....
3-pounder loaded rounds, steel shell	1,300	.....	1,300	.....
1-pounder loaded rounds, steel shell	1,000	.....	1,000	.....
6-pounder cartridge cases and details	9,400	.....	9,400	.....
6-pounder cartridge cases	.....	16,000	8,000	8,000
1-pounder cartridge cases	.....	18,300	18,300	.....
3-pounder loaded rounds, common shell	1,000	.....	1,000	.....
1-pounder loaded rounds, common shell	.....	60	60	.....
1-pounder loaded rounds, canister	.....	60	60	.....
1-pounder saluting rounds	.....	60	60	.....
6-pounder steel shell, loaded and fused	.....	1,400	1,400	.....
(b) *Hotchkiss ammunition.*				
6-pounder loaded rounds, steel shell	100	.....	100	.....
3-pounder loaded rounds, steel shell	500	.....	500	.....

a Order canceled.

Material.	I.	II.	III.	IV.
C.—Union Metallic Cartridge Company—Continued.				
(c) *Company's material.*				
5-inch cartridge cases	.....	3,000	.....	3,000
3-inch cartridge cases	.....	3,500	.....	3,500
6-millimeter ball cartridges	.....	502,000	2,000	500,000
.38-caliber revolver ball cartridges	.....	13,500	13,500	.....
D.—Hotchkiss Ordnance Company.				
6-pounder rapid-fire guns	.....	32	8	42
1-pounder rapid-fire guns	.....	2	2	.....
3-inch field guns	.....	50	.....	50
6-pounder breechblocks	.....	11	.....	11
3-pounder breechblocks	.....	1	1	.....
6-pounder bristle sponge heads	.....	6	6	.....
1-pounder bristle sponge heads	.....	6	6	.....
6-pounder accessory sets	.....	2	2	.....
3-pounder accessory sets	.....	2	2	.....
1-pounder sear	.....	1	1	.....
37-millimeter firing pin	.....	1	1	.....
3-pounder extractors	.....	2	2	.....
1-pounder field carriage	.....	2	2	.....
1-pounder limber	.....	2	2	.....
1-pounder top carriage	.....	2	2	.....
3-inch shrapnel	.....	5,000	.....	5,000
6-pounder drill cartridges	.....	360	360	.....
1-pounder drill cartridges	.....	20	20	.....
37-millimeter drill cartridges	.....	110	110	.....
E.—Pratt & Whitney Company.				
(a) *For Hotchkiss Ordnance Company.*				
1-pounder rapid-fire guns	25	.....	25	.....
(b) *Company's material.*				
Thread gauges, sets	.....	2	2	.....
Miscellaneous experimental small-arms work	.....	.....	.....	.....
F.—Colt's Patent Fire-Arms Manufacturing Company.				
.38-caliber D. A. revolvers	641	498	1,119	20
Spare parts for revolvers	2,000	1,038	3,038	.....
Conversion of D. A. revolvers, model 1889 to model 1895	.....	1,038	1,038	.....
Cartridge packs, revolver	.....	340	340	.....
Loading blocks, revolver	.....	12	12	.....
Reloading tools, .38-caliber	.....	2	2	.....
Small-arms chamber gauges, set	.....	1	1	.....
6-millimeter automatic machine guns	.....	50	.....	50
G.—Bridgeport Gun Implement Company.				
Cleaning cords for navy rifle	.....	10,000	.....	10,000
H.—J. B. Chapman & Co.				
13-inch powder tanks	498	.....	498	.....
12-inch powder tanks	840	.....	262	578
10-inch powder tanks	59	.....	59	.....
8-inch powder tanks	2,410	.....	2,244	166
6-inch powder tanks	1,187	.....	1,187	.....
I.—Henry A. Brown.				
Revolver holsters	40	420	460	.....
Revolver cartridge boxes	.....	400	400	.....
K.—T. C. Orndorff.				
Cartridge belts	.....	10,400	400	10,000
L.—William H. Wiley & Son.				
Canvas leggins	.....	280	80	200
M.—Remington Arms Company.				
Bayonets	.....	10,000	.....	10,000

Material.	I.	II.	III.	IV.
N.—American Ordnance Company.				
ders transferred from Hotchkiss Ordnance Company.				
ler rapid-fire guns	.....	.....	.....	24
ield guns	.....	.....	.....	50
ler breechblocks	.....	.....	.....	11
shrapnel	.....	.....	.....	5,000
ders transferred from American Projectile Company.				
der steel shell	.....	.....	.....	48,000
fused shrapnel	.....	.....	.....	5,000
(c) *Order placed with company.*				
der rapid-fire gun	.....	1	.....	1
ler top carriage	.....	1	.....	1
ler field carriage	.....	1	.....	1
ler limber	.....	1	.....	1
ler dismounting pins	.....	1	1	.....
ler hammer	.....	1	1	.....
ler sear spring	.....	1	1	.....
ler bristle sponge heads	.....	2	2	.....
der D. S. finger catch pins	.....	2	2	.....

American Projectile Company, Lynn, Mass.—All orders antedating eginning of the fiscal year 1896 were completed early in the year, the company was for some time without any Navy work. Upon ormation of the American Ordnance Company the Projectile Com- was merged in it, and the shops, improved and extended, are now ated by the former corporation as its ammunition department. shops and a large part of the machinery of the Thomson-Houston ric Welding Company were purchased and fitted up for the man- ure of projectiles. The capacity of the plant is at present 1,000 nder shells per week, and this output can be doubled on six weeks' e by the addition of a second hydraulic press and a few machines— imit of product being practically the capacity of the press now e.

e manufacture of 6-pounder steel shells has been pursued with ; success, only a small percentage of those manufactured during ast year having failed to meet the specified requirements. Occa- l failures of the shell to burst when fired under the conditions of pecifications are believed to be due, in large part at least, to insuf- t strength of the fuses used. The gas check devised by the any and applied to a considerable number of fuses functioned sat- orily and insured bursts in every case.

e 4,000 time fuses ordered in 1895 have all been delivered, a er of minor defects developed during tests at the Naval Proving nd having been corrected.

ombination time and percussion fuse of new design has been pre- l and will be furnished with the 10,000 3-inch shrapnel ordered this company and the Hotchkiss Ordnance Company. This fuse ins two plungers, one of which, on discharge, explodes a primer h ignites the time train. The second plunger, upon the projectile ing, explodes a primer which flashes through a magazine into the ctile. The necessity of a fuse cutter is entirely obviated by the e of an automatically locking ring which may be turned freely t the fuse in one direction, so that a hole in one side of it may be ht to register with any desired aperture leading to the time train. train in these fuses will be limited to a maximum burning time out eleven seconds, which will be ample for the 3-inch field gun

projectiles in which they are to be used. In order to provide sufficient space in the interior of the fuse for the time and percussion elements, the conical or elongated cylindrical shape has been abandoned, the new fuses being made flat and projecting only about an inch from the point of the projectile. The diameter is such that it is not necessary to dispose the time train in a spiral, but it is laid circumferentially around the fuse head in a straight channel.

B. *Winchester Repeating Arms Company.*—All material on old orders has been completed during the year with the exception of the 3-inch cartridge cases. As stated in the last annual report from this office, the work on these cases was suspended to await the Bureau's decision in regard to the proposed reduction in the chamber diameter of the 3-inch gun. It having been decided to make a reduction of 0.01 inch in this diameter at the neck and mouth, 74 cases were completed on this design and shipped to the Naval Proving Ground for test. Should they be found satisfactory, work on the orders will be at once resumed.

The order for 3,000 5-inch cases, placed in April, 1896, is in hand, but deliveries have not yet been made, owing to the rejection of several lots of electric primers furnished with the cases. The failure of these primers has led to a minute investigation of the design of the primers, the methods used in the manufacture, and the conditions under which they are used in test and in service.

The failures noted seem to have been generally due to failure of the flame to pierce the cartridge bag. It is thought that the substitution of serge for the heavy cotton cloth now used for these bags in the 5-inch ammunition, will greatly reduce the number of failures, and will probably eliminate entirely this cause of nonaction.

The use of smokeless powder in minor caliber rapid-fire ammunition having been contemplated and actually entered upon, it became necessary to devise a means of igniting the charges, which could not be done with the small rapid-fire primers used with black-powder charges.

The expedient of placing a small charge of black powder in the cartridge case in rear of the smokeless powder charge was tried but was not found entirely satisfactory. A series of experiments were therefore undertaken with a view to developing a primer which should fit the primer seats in the cartridge cases already in service, and which should carry a charge of powder or gun cotton sufficient to ignite the smokeless-powder charge with certainty. These experiments, which were made the subject of a special report to the Bureau, resulted in the adoption of a primer about $1\frac{1}{16}$ inches in length, and containing a charge of 17 grains of fine-grain black powder. This primer is of the same diameter as the short primers hitherto used, is as easily seated, and can be depended on to function properly without hang-fires in the 1-pounder and 6-pounder guns.

By the Bureau's direction all 3-inch cartridge cases for the 3-inch field gun are to be fitted with these primers.

A long electric primer, containing a charge of black powder, was designed, and a number of experimental ones made and tested in large caliber rapid-fire cases. There being practical difficulties in the way of their use, it was decided to use a fixed black-powder charge in the base of the cartridge, and to continue to employ the present type of primer.

Reports received from the Naval Proving Ground on the test of the final lots of 6-inch cartridge cases noted two instances in which the base of the mouth cup was blown out with the projectile, while the cylindrical body remained in the chamber, jamming the next shell entered. An examination of the design of the cup shows that the junction of the body and the base is at rather too sharp an angle, and,

perhaps, too little metal along that line. In future manufacture it is proposed to give the cup more of a curve in this part and to give a greater thickness of metal, which will, it is thought, prevent the recurrence of the accident reported.

A contract was made with this company on October 31, 1895, for the manufacture of 10,000 Lee straight-pull rifles for the Navy, and the preparation for the manufacture of these guns and ammunition for them has been the most important work on hand during the year. It is treated at length in a subsequent portion of this report.

C. *Union Metallic Cartridge Company.*—All outstanding orders for Driggs rapid-fire ammunition were completed during the year, as were also a number of small additional orders for the service and for the Naval Militia. An order for 32,000 6-pounder cases and 27,000 1-pounder cases, placed with the Driggs Ordnance Company, was filled by this company and by the Winchester Company in equal parts. Eight thousand 6-pounder cases remain to be delivered.

It was decided early in the year to add to the company's resources machinery for the manufacture of large-caliber rapid-fire cartridge cases, and a draw bench and other necessary machines and tools are now in process of installation.

An order for 3-inch and 5-inch cases has been obtained from the Bureau, and work will be begun under it as soon as the machines are properly adjusted.

The capacity of the plant for minor-caliber cases remains substantially as heretofore reported.

Experiments with 6-millimeter ammunition have been continued, several successful lots having been produced. Some new difficulties have been met with, which are fully detailed under the head of "Small-arm ammunition." The new elements introduced into the ammunition problem by the adoption of an automatic machine gun have, for a time, retarded the perfecting of the standard cartridge, which, at the date of last report, seemed to be within reach.

D. *Hotchkiss Ordnance Company.*—Owing to the consolidation of this company with the Driggs and other ordnance companies, which, contemplated for some time, was consummated early in the present calendar year, the Providence shops were abandoned, the only work done in them for the Bureau since last report being the manufacture of a few drill cartridges.

E. *Pratt & Whitney Company.*—The 1-pounder guns, 52 in number, referred to in my last annual report were completed during the year, 27 being furnished to the Navy and 2 to the Naval Militia; the remaining 23 were inspected and turned over to the Hotchkiss Ordnance Company.

Of the nine 6-pounder guns made up for stock, 1 was sold by the company and 8 furnished to the Navy on an order for 32 guns.

The completion and delivery of these guns was the last work of importance done for the Hotchkiss Ordnance Company. Subsequently the machines and tools used in their manufacture were sold to the American Ordnance Company and are now being set up in their Bridgeport shops.

F. *Colt's Patent Fire-Arms Manufacturing Company.*—The principal work on hand during the year has been the completion of the Bureau's order for 2,000 revolvers, the alteration of model 1889 revolvers to model 1895, and the preliminary work on 50 automatic machine guns for the Navy. A few small orders for revolvers for the Naval Militia have also been filled.

The new model revolver, embodying improvements to correct the faults noted in previous reports, proved so superior to the first model double-action revolver that the pistols already in service have been, by the Bureau's direction, converted to the new model in such lots as can be collected from ships and navy-yards and sent to the company's works.

The new parts required by the change of model are as follows: (1) Trigger-locking lever; (2) trigger-locking lever screw; (3) cylinder-stop bolt; (4) cylinder-stop bolt spring. In converting a pistol of old model to conform to the new pattern the following parts require replacing, owing to a change of form: Frame cap, cylinder, latch, ejector rod, ratchet, trigger, hand, rebound lever.

The supply of all these new parts, with the necessary changes in the frame, polishing, and refinishing, are included in the unit price originally named by the company. The cost of the work has been slightly increased by the expediency of replacing defective parts by new ones; the increased expenditure is, however, justified by the result, as the revolvers as finally turned out are practically new and are equally serviceable with the same number of new weapons, at only slightly more than half the cost.

The Bureau's attention has already been drawn in a special report to the very bad condition in which many of these revolvers have been received at the factory. A considerable number of barrels have been found so corroded that it was necessary to replace them; slight attention and care should be sufficient to prevent such deterioration.

The subject of the automatic gun is treated under the general head of "Machine guns."

G. *Bridgeport Gun Implement Company.*—This company, at my request, furnished several samples of cord cleaners for the navy rifle, which were from time to time forwarded to the Bureau for inspection and test at the Proving Ground.

The type finally decided on as being the most practicable and serviceable consists of a cord with a brass weight at one end and a bristle and loop at the other. Specifications were prepared in this office and an order for 10,000 cords placed with the company. A large number of them are in course of manufacture, and all will be ready for issue to the service with the new rifles in September.

H. *J. B. Chapman & Co.*—The manufacture and delivery of powder tanks under the Bureau's requisition of December, 1894, has proceeded with regularity and dispatch.

The 6-inch, 8-inch, and 10-inch tanks, being most urgently needed, were first completed, only a few of the 8-inch size being still undelivered. Attention was then turned to the 13-inch tanks, and finally to the 12-inch. All deliveries should be completed by the 1st of September.

As originally designed, the copper of the bodies of the 6-inch and 8-inch tanks were of No. 20 Birmingham gauge, No. 21 gauge being used for the 10-inch, 12-inch, and 13-inch. The smaller tanks were found sufficiently stiff, but the 10-inch are somewhat lacking in this particular, and it is advisable when more tanks are ordered to so modify the design as to permit of the use of heavier copper without unduly increasing the weight of the tank.

The design of the 12-inch and 13-inch tanks was modified before the manufacture was commenced by dispensing with the composition ring to which the handles were attached and substituting for it two handle plates riveted to the body. The weight thus saved was put into the *body, No. 20 gauge* copper being used. The stiffness was still further

increased by working an extra bead around the body. The handle plates lie between the two beads, abutting against them, and are secured by four rivets, so that ample strength is insured. A sample tank of each size was tested by loading it with water and brass chips to twice the weight of the charge it was intended to hold; after being suspended by the handles for several hours no distortion or leakage was discernible.

All tanks are tested by external hydraulic pressure to a strength of 5 pounds per square inch, a very small percentage being found defective.

I. *Henry A. Brown.*—A small number of revolver holsters and cartridge boxes have been furnished for the Navy and the Naval Militia.

K. *T. C. Orndorff.*—A few small orders for cartridge belts for the Navy and Naval Militia were filled during the year.

A sample woven belt adapted to the new ammunition was prepared in accordance with suggestions of the Bureau. The sample having been approved, an order for 10,000 belts was placed with Mr. Orndorff, and deliveries will probably be made soon, though they have not begun at this date.

The new belt, being of dark-blue woven material, presents a handsome appearance, and the arrangement of straps is such that it can not be worn in a slovenly manner. It has twelve woven pockets with leather flap covers, each pocket being designed to hold three packs, or fifteen cartridges. No provision is made for carrying single cartridges, as ammunition will be issued only in packs. A brass hanger for suspending the bayonet scabbard is provided and may be hooked into either side of the belt as it may be desired to buckle it either in front or in rear of the body.

L. *William H. Wiley & Son.*—This company have furnished a considerable number of canvas leggings for the regular service and for the Naval Militia. Their material has been found of uniformly good quality both as to workmanship and material.

M. *Remington Arms Company.*—The preparation of a design for a knife bayonet and the construction of a model on the lines laid down by the small-arms board, as well as the drawing up of specifications for their manufacture, were intrusted to this office, and in accordance with the Bureau's instructions the approved model made by the Winchester Repeating Arms Company was submitted to several arms and cutlery manufacturers in the East, who were requested to make bids for the supply of 10,000 to the Navy.

The Remington Arms Company, having submitted the lowest bid and making satisfactory guarantees of delivery, received the order. Their bid for scabbards was not accepted, as they could make only drawn-steel scabbards, while the Bureau preferred one of leather and steel.

The company was advised on March 31 that the order had been awarded them, and they at once entered upon the work of designing and making tools and fixtures for the manufacture. This work has now reached such a stage that it seems safe to predict that assembled bayonets will be turned out by September 1. The economical output will be about seventy-five a day. This could be increased very largely if the size of the order warranted the extra expense.

N. *American Ordnance Company.*—The event of leading importance in ordnance matters in this district during the year is the formation of the American Ordnance Company, harmonizing and uniting the hitherto conflicting interests of the Hotchkiss and Driggs Ordnance companies. The American Projectile Company has also been merged in the new company, in which large interests are also held by other corporations

and individuals engaged either directly or indirectly in the production of ordnance material.

This company having gained ownership or control of the patents on Hotchkiss and Driggs rapid-firing guns, two types of machine guns, and the Howell torpedo, and having combined the plants and resources of the two principal gun-making companies, will naturally be able to produce material at less cost than was possible under the old régime, and it is fair to suppose that the Government will benefit by the reduction.

An idle factory building advantageously located in Bridgeport, Conn., was purchased, thoroughly repaired—being practically rebuilt, in fact—and extensive additions were made to it, some of which are not yet completed. The total frontage of the factory is about 700 feet, and its depth about 200 feet. The main building is three stories in height, the gun shop and storerooms having only one story. Commodious engine rooms, torpedo testing and assembling rooms, shrinkage pit, and gun-browning rooms are special and admirable features of the establishment.

The whole factory has been furnished with electric light and power, a large number of machines having independent motors for running them without regard to the rest of the shops. The machinery installed comprises the best from the plants of the Pratt & Whitney Company, the Cramp Gun Works, and the Hotchkiss Company's ordnance and torpedo shops at Providence. A number of new and improved machines have also been added.

The policy pursued in building and equipping the shops has been a broad and liberal one, and the logical result has been reached in an establishment which, already extensive, is capable of indefinite expansion in case the military needs or the commercial policy of the United States should at any time extend the market for war material either at home or abroad, or both.

It is difficult to estimate at present the capacity of this establishment, but under the same able direction which prevailed in the gun department of the Pratt & Whitney Company the output will undoubtedly be somewhat greater than the combined product of the two concerns between whom the work was formerly divided.

RAPID-FIRE GUNS.

Aside from the twenty-five 1-pounder guns ordered last year and delivered early in the present year, only two guns of this caliber have been furnished, both for the Naval Militia. A third one ordered has not yet been delivered.

An order placed with the Hotchkiss Company for thirty-two 6-pounder guns has been only partially filled, 8 guns already on hand having been furnished. No steps have been taken to manufacture the remaining 24, but unless the Bureau consents to accept Driggs guns in lieu of the Hotchkiss ordered they will probably be the first work to be done in the new shops.

No changes of design or detail have been made in these guns during the present year.

The transfer of the manufacture of Driggs-Schroeder guns from Philadelphia to Bridgeport has brought their inspection again into the range of duties of this office, and in accordance with the Bureau's orders all inspection records have been turned over by the inspector at Cramp's.

There are now on hand at the American Ordnance Company's shops—

Four-inch Driggs-Schroeder R. F. guns	4
Six-pounder Driggs-Schroeder R. F. guns, 50 caliber	40
Six-pounder Driggs-Schroeder R. F. guns, 45 caliber	5

Four 45-caliber 6-pounders have been sold to the United States Revenue-Cutter Service, and are being prepared for delivery.

MACHINE GUNS.

The year has been an eventful one in machine-gun matters, and though at this date a final decision has not been reached as to which one of several competing guns is the most desirable for adoption as the standard naval gun, much has been done toward that end, and it seems probable that a few weeks at most will see the question settled.

In the last annual report from this office three machine guns were named as being in course of development in this district for submittal to the naval board on machine guns; shortly afterwards, and before the August session of the board, the Pratt & Whitney Company suspended work on their gun, a two-barreled, crank-operated gun, on the Gardner system, having become convinced after long experiment that no crank gun could be made to handle successfully and safely the modern smokeless-powder ammunition, owing to the danger from hang-fires. Repeated instances occurred of cartridges exploding after being entirely drawn from the gun, in rapid fire, and in one case a cartridge was discharged when partially out of the chamber, damaging the mechanism.

The Gatling Gun Company still having faith in the crank principle, and having met with gratifying success in handling .30-caliber ammunition, completed a gun of 6-millimeter caliber and submitted it in competitive trial with other guns to the Navy board.

The Colt automatic gun was also completed and was tested by the board. Other guns submitted were the Accles Improved Gatling, the Maxim automatic, and the Hotchkiss automatic, the latter a gun of Austrian invention, formerly known as the Odkalek.

The board held several sessions, at which all these guns were tested, and in January, 1896, all tests having been completed, a report was submitted. Shortly after 50 guns of the Colt automatic type were ordered from the Colt's Patent Fire Arms Manufacturing Company, and the Maxim and Hotchkiss Company informed that a second opportunity would be given them to exhibit their guns to the board before the remainder of the guns required were ordered.

The Colt Company accepted the order for 50 guns, guaranteeing perfect operation with rimless cases (all competitive tests were with flanged cartridges) and a minimum uninterrupted speed of 400 shots per minute for one minute. Work was at once begun, and a model gun made, which has been tested and found to work in an eminently satisfactory manner, justifying the Bureau's conclusion that a successful automatic gun could be produced.

Three guns have been completed, assembled, and provisionally tested. Lack of suitable ammunition has made it impossible up to this time to give any of these guns the exhaustive tests contemplated by the Bureau, or even to prove them for acceptance. It is hoped at an early date to receive a large shipment of Troisdorf powder, when sufficient ammunition can be furnished to complete the tests of the three finished guns. Thereafter the remainder of the order will be rapidly pushed to completion, a large percentage of the parts being already in hand.

The Colt gun is exceedingly simple in construction, and has not more

than one hundred separate parts, a surprisingly small number, considering the type. It has been designed with great care and with due attention to the often conflicting requirements of lightness and strength, so that with a maximum weight of 40 pounds no part, with the single exception of the extractor, has been broken in the course of a number of very severe tests.

The rifling adopted is the same as that decided upon for the barrels of the new small arms. It is of pure Metford form, consisting of six grooves of a uniform depth of 0.004 inch, and having a twist of one turn in 7.5 inches. The life of this rifling has not yet been determined, but it is evidently considerably longer than that of the experimental rifling previously used, in which the groove was of slightly different form and of more rapid twist.

A flat-leaf front sight has been adopted, which is grooved on each side, leaving a bead at the top, upon which the eye is quickly fixed without effort. The rear sight is a plain folding-bar sight with spring slide. It is marked for all ranges from 300 to 2,000 yards. In the course of the experiments for marking the sight several hundred shots were fired, with most gratifying results as to accuracy. The idea held in some quarters that the motion of the pendulum would seriously affect the accuracy of the gun has not been borne out by experience. The vertical jump-angle of the gun and service mount is only about 4′ of arc, and is practically constant at all ranges and at all rates of fire. On one occasion, in an ammunition test, 140 shots were fired rapidly at a 300-yard target; 2 sighting shots not considered, all the rest fell in a circle of 12-inch radius, the greatest lateral dispersion being about 7 nches. The gun was unclamped and in hand during this firing.

The slight recoil of the automatic gun and the absence of strain on the mount are evidenced by the facts that it can be fired from the shoulder without inconvenience, that when placed in the saddle without a retaining pin and fired for several seconds the displacement is so small that the pin can usually be readily entered without moving the gun, and that when secured in the saddle, the tripod placed on a smooth platform, and the gun fired, there is only a slight rearward movement of the tripod after considerable firing.

A tripod mount has been designed for use on shore, the pivot of the saddle being of such a diameter as to fit the adapters hitherto used for mounting Gatling guns in 1-pounder cage stands. The shore mount will weigh about 52 pounds. Two men will be able to transport gun and mount without inconvenience.

With each gun and mount there will be furnished ten belts, each holding 250 cartridges, and a small box of accessories and spare parts. The accessory box and the jointed wiping rod will be secured to the tripod, and will thus always be at hand when required.

In case the Bureau should, in the future, order additional guns of this type, a few minor improvements might be made. As at present constructed, the interior of the receiver is difficult of access, some other automatic guns being superior to it in this respect. It would not be a difficult matter to so alter the design that free access could be had into the mechanism without detracting anything from the strength of the frame. There are a number of screws used in the gun, which, though not particularly objectionable, as their removal is not often necessary, might be replaced by pins with locking devices. All pins could be brought to one or two standard sizes without affecting weight or strength materially.

In addition to the 6-millimeter gun, the Colt Company has also

perfected guns of the same type of other calibers for handling the following cartridges:

	Caliber.	
United States Army	inch..	.30
Remington	millimeters..	6
Mauser	do....	7.65
Mexican	do....	6.5
Austrian	do....	7

All these guns have operated perfectly, that of army caliber having been exhaustively tested at the Springfield Armory.

The Hotchkiss automatic gun is so far similar to the Colt that it is operated entirely by powder gas escaping through a hole in the bore near the muzzle; instead of a pendulum receiving the gas pressure and imparting motion to the mechanism, a piston is employed.

This gun was submitted to the machine-gun board at one of its sessions, but was so handicapped by conditions of handwork and by imperfection of parts that it could not be given a thorough test. Since that time its development has been in the hands of Mr. E. G. Parkhurst, of the American Ordnance Company, by whom it has been greatly improved. A number of minor changes have been made in it with a view to decreasing weights, increasing strength, and insuring certainty of action. The gun is now nearly ready for resubmittal to the board in competition with the Maxim automatic.

The Maxim gun having been built in England, no opportunity has been afforded to watch its development, and the only information received has been from Mr. Maxim's letters, forwarded to this office from time to time through the Bureau. It is understood that the recoil or "blow-open" principle has been abandoned for the 6-millimeter caliber and the gas escape used as the sole motive power.

SMALL ARMS.

The Lee straight-pull rifle having been adopted for the use of the Navy, bids for the construction of 10,000 guns similar to the sample gun tested were invited from various arms companies. The gun was examined by several companies and the estimates of cost prepared. The contract was awarded to the Winchester Repeating Arms Company, of New Haven, Conn., the papers being signed and the contract formally concluded on October 31, 1895. The company agreed to build a model gun and upon its approval to proceed with the manufacture, delivering 500 guns within ten months from the date of the contract and to complete deliveries within one hundred days thereafter.

The model gun was completed and tested in January, 1896, work on barrels having been pushed in the meantime. After the approval of the model, work was at once began on tools, fixtures, gauges, etc., and forgings ordered. The work has been prosecuted with such dispatch that there seems at present to be every reason to believe that deliveries will be made within the contract time.

The model gun shows but few and slight differences from the original gun owned by Mr. Lee, such changes as were made being desirable as tending to cheapen manufacture, to strengthen weak points, and to reduce weight. The use of aluminum for bands and butt plates was, after investigation of the qualities of such alloys as were on the market, abandoned as impracticable or, at least, inadvisable. No compound of aluminum was found which seemed to promise a lightness compensating for its inferior hardness and resistance to breaking and denting. The use of steel for all metal parts of the gun was therefore determined

upon, weight being in all cases reduced as far as seemed consistent with efficiency and safety.

The details of the rear sight have not yet been definitely determined upon, but it will be an ordinary folding-bar sight with slide and without a wind gauge. Owing to the extreme flatness of the trajectory of the 6-millimeter rifle for ranges up to 800 or 1,000 yards, the sight will have only two positions below 800 yards, viz, 300 yards and 500 yards.

A model sight is now being made and will be tested by actual firing as soon as practicable, so that the issue of complete guns to the service may be delayed as little as possible.

Bayonets for the new rifles are being manufactured by the Remington Arms Company. No order for scabbards has yet been placed, but a satisfactory sample has been submitted by the Ames Sword Company, of Chicopee, Mass., who, it is expected, will be given an order for 10,000 scabbards at an early date.

The difficulty of making a cleaning rod of small diameter which should be sufficiently stiff for cleaning the bore of the navy rifle and which should not mar the rifling at the muzzle, proved so great that it was decided to use a "pull through" or cord cleaner, such as is quite generally employed with sporting rifles.

Ten thousand of these are being made by the Bridgeport Gun Implement Company.

The Winchester Company is engaged in the manufacture of sling straps of an approved design, an order for 10,000 having been placed with them.

The 1st of September has been set as the time for the first deliveries of rifles and all equipments, but unavoidable delays in the adoption of a rear sight will make it impossible to equip any of the ships with new outfits by that date; the 1st of October is the earliest possible date on which this can be done.

AMMUNITION.

(a) *Minor caliber rapid-fire.*—The 6-pounder steel shell now made have solid bases without the gas check contemplated by the Bureau's designs. The manufacture on these lines is cheaper, and the shell seem to perform equally well.

In pursuance of the Bureau's policy to abandon the use of common shell for minor caliber rapid fire-guns, only steel shell are now made, which are "armor piercing" under favorable conditions.

An offer will be made soon by the American Ordnance Company to furnish to the Bureau a quantity of blind loaded common shell, both 1-pounder and 6-pounder, which it is suggested be assembled and designated "target-practice ammunition." There appears to be only one reason for declining to accept this offer, or indeed for not pursuing the policy of using blind loaded common shell at all times for target practice; this is probably the same reason which has led the Bureau to abandon the use of common shell; that is, the multiplication of varieties of ammunition on board ship. When it is determined to reduce this variety, the steel shell is, of course, chosen to be retained, as it is the only one of value in action.

The idea of "target-practice ammunition" is, however, an attractive one on account of the great reduction in cost of target practice that would result from its use, or, conversely, the increased quantity of practice that could be allowed at the same cost.

One 6-pounder cartridge with loaded and fused steel shell costs at *present about $3.75*, while a similar cartridge with blind loaded common

shell would cost only about $2.40 at the most. The cost of the two varieties of 1-pounder ammunition would differ in about the same proportion, so that one-third more ammunition could be purchased at an equal cost by the adoption of a target-practice cartridge.

Ships on foreign stations would be obliged to have both kinds of ammunition, but ships at home and within easy reach of a magazine could dispense with steel shell entirely, being able to take in a supply quickly in case of emergency.

(b) *Small-arms ammunition.*—Upon the adoption of the Lee rifle, the desirability of using rimless cartridges in that arm led the Bureau to decide upon it as the standard ammunition, and the two ammunition companies proceeded to its development and manufacture. The rimless case, having less metal in the head, presents a more difficult problem to the manufacturers than did the flanged case. The high pressures developed by the combustion of the charge of nitropowder caused leakage and dropping out of primers, a fault which it has proved somewhat difficult to remedy. The introduction of the automatic machine gun added to the perplexities of the situation, as ammunition which had been successfully handled by a single-shot rifle failed lamentably when fired in the machine gun; this is believed to be due to the greater heat and possibly higher pressures in the machine gun and to the violence with which empty cases are ejected.

Several devices have been tried for holding the primers and preventing the leakage of gas about them. Primers of small diameter have been used, the object being to increase the amount of metal in the head of the case. This device did not prove satisfactory, as, owing to the less advantageous distribution of the fulminate mixture, frequent hang-fires were caused. Other expedients were resorted to, the nature of which have not been made known, but none of which has given entirely satisfactory results. The best ammunition produced has had the primers "crimped" in. The crimping seems to hold the primers in, but does not entirely prevent leakage.

Experience with 6-millimeter ammunition in machine-gun tests late in 1895 led to the conclusion that the bullets were not properly designed and did not take the rifling sufficiently to insure steadiness of flight. The shape of the bullet was consequently changed so that it should be cylindrical for a greater portion of its length. Its diameter also was increased by 0.002 inch.

At the suggestion of the contractors, slight changes were made in the cartridge case, looking to reduction of loss in manufacture. The new cartridge, known as Form No. 3, has given entire satisfaction except in regard to primers.

An order for 1,000,000 rounds of ammunition was placed in April, 1896, for the loading of which a quantity of Troisdorf powder was ordered from Germany by the Winchester and Union Metallic Cartridge companies. The shipment has not at this date arrived in the United States, but it is reported as on the way. Rifleite and Du Pont powder have been used for experiment in the absence of available Troisdorf.

More important matters having engaged the attention of the Bureau and of this office, nothing has been done in the matter of devising riot ammunition or blank cartridges. These matters should receive early consideration. For blank cartridges the use of papier-mâché or celluloid bullets, which would be entirely consumed, might prove satisfactory. Their cost has not been estimated, but would probably not be excessive.

GENERAL.

The progress of work during the year has been highly satisfactory, though the experimental and preliminary nature of much of it renders the showing in actual deliveries misleading.

The character of work done has been of the highest, rejections being rarely necessary. It is difficult to conceive of better material being produced than that furnished to the Bureau by the contractors in New England.

The total value of ordnance material delivered through this office during the fiscal year was $266,128.17, which was divided among the several companies as follows:

American Projectile Company	$35,784.56
Winchester Repeating Arms Company	42,321.60
Union Metallic Cartridge Company	1,313.50
Hotchkiss Ordnance Company	37,603.91
Driggs Ordnance Company	74,722.95
Pratt & Whitney Company	320.00
Colt's Patent Fire Arms Manufacturing Company	20,641.80
J. B. Chapman & Co	48,744.35
Henry A. Brown	616.00
T. C. Orndorff	600.00
William H. Wiley & Son	60.00
American Ordnance Company	3,399.50
Total	266,128.17

The cost of conducting the inspection has been as follows:

Pay of inspector	$1,200.00
Traveling expenses of inspector	897.84
Pay of subinspectors and helper	4,785.25
Repairs to typewriter	30.00
Telephone, telegraph, and miscellaneous charges	27.76
Stationery, about	75.00
Total	7,015.85

Percentage cost of inspection, 2.7 per cent.

Respectfully submitted.

N. C. TWINING,
Ensign, United States Navy, Inspector of Ordnance.

The CHIEF OF THE BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

F.

ANNUAL REPORT OF THE NAVAL PROVING GROUND AT INDIAN HEAD, MD.

NAVAL PROVING GROUND,
Indian Head, Md., September 10, 1896.

SIR: I have to submit the following report regarding this station, and the work in progress and completed during the past year:

PROGRESS OF STATION.

Since the last annual report the brick magazine, high-explosive magazine, and filling house mentioned therein have been entirely completed and are now in use. These buildings are of ample size for the

uses required and are well ventilated and protected from fire and also from sudden changes of temperature and moisture, the trouble with the extremes of temperature and moisture experienced with the old magazines having been entirely remedied.

The old frame magazine has been raised several feet from the ground, put in good repair, and a brick foundation erected under it, affording ample room for stowage. This building is now used as a metallic-cartridge house, and also as a fixed-ammunition room.

The dark room has been removed from the hillside to a position above the group of magazine buildings, and a brick foundation underneath, making a much larger dark room. The upper part of this building is now used for stowing photograph supplies, negatives, etc., and also as a suboffice and telephone room for the person in immediate charge of the powder magazines.

The old frame filling house has been raised and placed on a brick foundation, and also put in good repair. One-half of this building has been fitted up for a dispensary and quarters for an apothecary. The remaining portion will be used as a storehouse for electric supplies.

The necessary labor has been authorized and the material is now on hand, excepting the brick, which are being burned, for placing a brick foundation under the main storehouse. This building was built by contract on wood blocks, the sills being close to the ground. These blocks are now settling, and the necessary work will be done as soon as the brick are available.

The retaining wall and shed back of the storehouse has been lengthened 85 feet, increasing the storage room for iron and pipe, etc. This retaining wall was rendered necessary on account of the wash from the hillside.

A brick dynamo room has been erected alongside of the boiler room.

A brick cistern, with a capacity of 40,637 gallons of water, has been built on top of the hill at the head of the "valley," and being connected with the water mains furnishes water at a pressure of about 40 pounds per square inch at all the hydrants in the "valley."

The brick for all the above-mentioned work, together with the sewer traps, retaining walls, and other repairs made at the station, were all made and burned on the reservation at a much less cost than the market price.

Fifty-three oak electric-light poles, 147 pine piles for experimental turret foundation, 450 chestnut fence posts, and 2,160 feet of hard wood for target structures have been cut and used on the reservation during the year. No large timber has been purchased for keeping the target structures used in armor tests in repair.

Fifteen hundred cords of pine wood have been cut, hauled, and corded on the river bank ready for transportation to the yard. This work was done by contract, the wood costing $1.225 per cord as ready for delivery. Six hundred cords of wood cut last year have been delivered to the navy-yard for use. Twenty-eight hundred and seventy-five yards of wire, with seven gates, have been erected as fencing during the year.

FARM WORK.

From 20 bushels of seed rye there have been harvested 168 bushels of grain and about 5 tons of straw. From 84 bushels of seed oats there have been harvested 536 bushels of grain and 6½ tons of straw, the latter being equal to hay for fodder. Twenty-three acres of new ground planted in corn will, from present appearances, yield about 240 bushels

of corn and 4½ tons of fodder. Fourteen tons of hay have also been cut and stored. The station is therefore entirely self-supporting as regards fodder for the stock, and the worn-out land is rapidly improving in quality.

The work of hauling gravel and sand from the shore to replace earth and clay in the butts and around the "valley" and also the loading of the barge with sand and gravel for use at the navy-yard has been continued during the year.

During the year the following buildings have been completely painted and protected from the weather: Cottages Nos. 1, 2, 3, and 4, the office, the stable, the dark room, the old magazine, and also the roofs of the machine shop, storehouse, and coal shed.

One hundred and seventy-six locust and maple trees have been transplanted from the woods and placed around the driveways on the plateau. About 80 per cent of these have taken root and are in good condition. The roads in the grounds and also the main road running through the reservation have had slight repairs from time to time to keep them in good condition.

TELEPHONE LINE.

The telephone line has been constantly in use during the year and has been of great service to the station. New long-distance Bell telephones have been purchased for use on the line to the yard, and additional Turnbull telephones have been installed at different points on the station, facilitating the work considerably. Frequent repairs, however, are necessary to the main line to the yard on account of falling trees, etc., and also damage by lightning.

CHRONOGRAPH LINES.

The chronograph lines running to the different firing points of the station have been repaired from time to time and kept in good order, and the lengths of cables increased, in order, if possible, to prevent the constant repairs to the lines rendered necessary by the fragments of plate and projectiles in armor and plate tests.

ELECTRIC-LIGHT PLANT.

An electric-light plant is in process of installation, the dynamo room being finished, the line poles erected, and a 22.5-K. W. Westinghouse dynamo, with the necessary reels, wire, and material, has been ordered. The motive power for this dynamo will consist of a 30-horsepower Armington & Sims horizontal engine, obtained from the Washington Navy-Yard.

WATERWORKS.

An artesian well, with a 6-inch casing, has been driven to a depth of 463.5 feet and a water supply estimated to be about 14 gallons per minute has been obtained. This water rises to within 80 feet of the surface of the ground. A 16-foot aermotor on a 60-foot tripod, together with a 15,000-gallon tank on a 40-foot tripod, has been installed by the Chicago Aermotor Company, and 3-inch iron pipe water mains, with 2-inch offsets to the houses, have been laid. A brick cistern of 40,637 gallons' capacity has also been built on the hill at the head of the "valley," which is connected with the 3-inch water mains going down to the "valley," and to the wharf. The pressure of water from the water tank at the pumping outfit is sufficient to throw the water on the peaks of

the roofs of any of the houses, and the station is now fairly well protected from the danger of fire. Every portion of the pumping outfit furnished by the contractors, the Chicago Aermotor Company, has proved efficient and in accordance with the specifications, except the amount of water supplied by the aermotor, which so far has been unable to supply more than 10 gallons per minute.

SEWERAGE.

The dam at the head of the "valley" has been repaired, placed in good condition, and its outlet coupled onto the 24-inch terra-cotta sewer main. One thousand three hundred feet of 24-inch terra-cotta pipe, with eight brick manholes, containing 6-inch, 8-inch, 12-inch, and 18-inch inlets and branches, drains the "valley" proper and about 200 acres of the rolling land above the dam. As inlets into this sewer, there have also been laid 600 feet of 18-inch mains, 720 feet of 12-inch mains, 655 feet of 8-inch mains, and 1,760 feet of 6-inch mains, all being properly trapped, so that there is no danger from obstructions, and the system of sewerage at the station is now so far complete that there is no more danger from floods.

A stone sea wall from the velocity battery to a short distance below the wharf is in process of construction, the necessary stone having been contracted for and a portion of the wall already laid.

The firing range has been resurveyed and a sufficient number of range stations located, so that ranges up to 13,000 yards can be accurately measured. In making this resurvey several main triangulation points, whose positions were furnished by the Coast Survey Office, were located and used as a basis for the work.

A service Fiske range finder of the pattern now furnished to vessels has been installed on the hill in rear of the range battery, with a base line of 133.67 feet. This range finder will be tested as soon as the extra batteries rendered necessary by the short base are received.

STATION MACHINERY, FACILITIES, ETC.

The machine shop, with its engine, shafting, lathes, planers, shapers, saws, etc., has worked satisfactorily, and has been of great use in making slight repairs at different times. The small vertical boiler has been retubed at the Washington Navy-Yard, and the large horizontal boiler has been retubed and placed in thorough repair at this station.

The traveling crane has worked fairly well, but great trouble has been experienced with the turntables for this crane, and also with the wide tracks intended for it, on traversing with heavy weights these tracks giving a great deal of trouble on account of settling. The whole system of traveling crane tracks at the station should be overhauled and put in thorough repair either by laying the tracks on piles or concrete foundations and also with a sufficient number of stringers or cross rods to prevent all danger of spreading. The turntables are almost useless, the cast-iron roller paths on which they turn breaking frequently and requiring constant attention and repair.

The derrick on the wharf is unsafe and will not even lift a 4-inch gun without danger. The swinging crane or derrick mentioned in the last annual report should be installed on the northwest corner of the wharf, so that guns up to 6 inches in caliber could be taken off the tug when necessary without using the barge.

An additional track, with switches, from the wharf to the first turntable is also necessary, as delay is often caused in running heavy guns

and heavy plates above the first turntable in order to switch them out of the way and clear the track.

The launch *St. Barbara* was hauled up in the spring and placed in good repair, and since then has been running constantly, and is now in fair condition. The launch *Ordnance* was hauled up at this station and placed in thorough repair, and new false keel added, copper replaced where necessary, and the boiler overhauled and retubed. A new 8 by 8 inch engine was obtained from the Bureau of Steam Engineering. The boat is now in good condition for the general work of the station, such as carrying out targets, sending officers to range stations, etc., and also for light towage work. The whaleboat is in fair condition. A second double-scull skiff has been built, making two now on hand, both in good condition.

STATION NEEDS.

The recommendation for dwellings for the leading men and boats' crews made in the last annual report is continued. At least six small brick houses, at an approximate cost of about $600 each, should be erected, to be built of brick made on the reservation.

The hydraulic pumping machinery, the accumulator, etc., are only protected by an old tumble-down building erected from scrap material obtained from the old ship house at the navy-yard. This pumping plant should be housed in, and under the same roof there should be built a room for armor-piercing and other projectiles (not loaded), and a tool house, and also a blacksmith shop. This building could be readily built at a cost of $1,500, the brick to be made on the reservation. A small carpenter shop, not to cost more than $200, is needed very much, and should be erected at some convenient place sufficiently distant from the machine shop and storehouse.

A forage shed should be erected at the stable in order to cover and protect the forage. The barn on the Irwin farm should also be repaired for this same purpose.

The old wooden bomb proof at the range battery is fast rotting out and falling to pieces, and should be replaced by a suitable brick bomb proof as soon as possible. As this is the largest shelter on the station, and the one generally used by the employees working near at hand during tests, it should be placed in good condition at once.

The brick retaining wall, partly finished on the south side of the "valley," should be continued when opportunity offers all the way up the "valley" as far as the machine shop.

ARMOR TESTS.

The following armor tests have been made during the year:

The *Iowa's* 14-inch harveyized nickel-steel side-armor plate B–230, Group 21, Carnegie Steel Company, together with experimental target structure, representing the framing behind the belt armor of the *Iowa*, was tested first September 4, 1895, by being attacked with two 10-inch Carpenter and one 12-inch Wheeler-Sterling armor-piercing projectile, as stated in last annual report. This plate was further tested September 17, 1895, the portion attacked being the right-hand fragment remaining from the previous test. A Wheeler-Sterling 13-inch armor-piercing projectile was used, with striking velocity of 1,800 foot-seconds. Projectile penetrated plate, backing, the two 20 pound plates in rear of backing, and the rest of the target structure; was recovered 10 feet back in the sand, set up 3 inches in length, diameter at bourrelet

increased 0.55 inch, fine surface hair cracks extending longitudinally from the point. Back bulge in plate was 45 inches in diameter, broken out and carried to the rear. The plate, though remaining on structure, was through cracked to old 12-inch impact and vertically from top to bottom. Backing was badly splintered and carried away. The main portion of the target structure stood the impact perfectly, but the bulkheads, beams, and plating in rear of impact were badly bent and twisted by the projectile and the fragments of the back bulge in passing through.

A D'Humy patent 6-inch armor plate was tested October 15, 1895. This plate was made of 37 slabs 38 inches long, 5 inches wide, and 1 inch thick, placed side by side, their edges forming the face of the plate. These slabs were held firmly together by two bottomless boxes and a U-shaped frame, placed one inside the other, with the slabs inside the inner box. The whole plate was then secured to two ½-inch boiler plates. A Wheeler-Sterling 6-inch armor-piercing projectile was used, with striking velocity of 2,100 foot-seconds. The shell broke up on plate, but the plate was completely wrecked. The slabs and other fragments were forced outward, rupturing the retaining frames and scattering the fragments of the plate and slabs all over the ground. These slabs showed so little signs of the impact as to indicate that the shell met with very slight resistance.

An experimental 3.5-inch plate, made by the Sterling Steel Company, was tested October 15, 1895. This plate was composed of a slab 38 inches long, 13 inches wide, and 2.5 inches thick, fitted on the back with dovetail tongues which fitted into dovetail grooves in a backing plate of high carbon steel 1 inch thick. This plate was attacked by a Driggs 6-pounder A. P. shell, with a striking velocity of 1,805 foot-seconds. The shell broke up into a large number of fragments. The lower half of the plate was broken up into irregular fragments, and the whole plate was thrown down from the backing.

A test of a 4-inch experimental plate, made by the Sterling Steel Company, took place October 21, 1895. In this plate the quality of extreme toughness was combined with great tensile strength. It was attacked with a 4-inch Carpenter A. P. projectile, with a striking velocity of 1,500 foot-seconds. Projectile penetrated plate and broke diagonally across from bourrelet to point 2.5 inches in rear of bourrelet. Plate cracked and shattered into eight pieces.

A comparative test of three Carnegie Steel Company's nickel-steel 3-inch deck plates, B–402, B–405, and B–406, was made October 21, 1895. Plate B–402 had received no treatment, and was similar to the old protective deck plates. Plates B–405 and B–406 were double forged and face hardened. B–405 had a medium hard back, and was hardened to a depth of five-sixteenths of an inch. B–406 had a softer back, and was hardened to a depth of seven-sixteenths of an inch. On the back of each plate was fitted three 10-inch bulb angles fastened with seven-eighths-inch tap bolts. These plates were set up and secured so that their surfaces made an angle of 10 degrees with the line of fire of the 8-inch gun, and 12 degrees with the line of fire of the 6-inch gun.

Plate B–402 was first attacked with a Wheeler-Sterling 6-inch A. P. projectile, with a striking velocity of 2,100 foot-seconds. Projectile glanced on plate and broke up, cutting a gouge in plate 18 inches long, 3.75 inches wide, and five-eighths of an inch high. Surface of gouge was smooth. Plate dished 1 inch at impact. Back bulge oval, 17 inches long, 9 inches wide, seven-eighths of an inch high. Plate uncracked. Five deck-beam rivets were broken. A Carpenter 8-inch A. P. projectile, with a striking velocity of 1,750 foot-seconds, was then

used. This projectile glanced on plate and broke up, cutting a gouge 19 inches long, 4 inches wide, and 6 inches deep. Plate uncracked. Back bulge oval, 20 inches long, 9 inches wide, and 1.75 inches deep. Plate dished at impact 1.1 inches, and bent away from straight line joining top and bottom edges 1¼ inches. Middle deck beam thrown down, all bolts having been sheared. Three bolts in top beams also sheared.

Plate B–405 was then attacked with a Carpenter 8 inch A. P. shell, with a striking velocity of 1,750 foot-seconds. Projectile glanced on plate and broke up, knocking out a rectangular piece of plate 6 by 11 inches. Plate dished at impact 1.5 inches. Several gashes were made in the face of the plate by fragments of the shell. Three rivets sheared off.

Plate B–406 was then attacked with a Wheeler-Sterling 6-inch A. P. shell, with a striking velocity of 2,100 foot-seconds. This projectile glanced and broke up, cutting a gouge 17 inches long, 5.73 inches wide, 1.1 inches deep. Back bulge oval 22 inches long by 13 inches, 9 inches high. Front half of plate bulged five-sixteenths of an inch to the right, rear half same distance to the left. Thirteen deck bolts sheared off. An 8-inch Carpenter A. P. shell, with a striking velocity of 1,750 foot-seconds was next used. This projectile glanced and broke up, cutting a gouge 14.5 inches long, 7 inches deep. Back bulge 18 by 9 inches, seven-eighths of an inch high. Small cracks outlining a piece of plate starting to break out. Plate dished 1 inch. Front of plate bent 1.2 inches from its original position. Middle deck beam broken loose and thrown down. Several gouges cut in face of plate by fragments of projectiles.

The *Iowa's* curved 8-inch harveyized nickel-steel turret plate, B–396, representing Group 22, Carnegie Steel Company, was tested January 8 and 9, 1896. This plate was attacked with two 6-inch Wheeler-Sterling A. P. shell, with striking velocities of 1,689 and 1,846 foot-seconds, respectively. The first shell broke up on plate, a small portion of point remaining welded; estimated penetration, 0.75 inch. Plate cracked into four pieces, three of which were thrown down. Fracture showed the plate to be very hard and brittle. The largest of the fragments was attacked with the second shell which broke up and scattered, a portion of the point and head remaining welded. Estimated penetration, 2 inches; diameter of hole, 6 inches; splash, 7 inches; plate badly flaked; back bulge, five-tenths inch high, 7 inches in diameter. Plate through cracked from impact to right edge.

The *Iowa's* harveyized nickel-steel turret plate, B–389, Carnegie Steel Company, was tested February 8, 1896. This plate had two vertical cracks in its surface, running the full width of the plate, seven-eighths of an inch wide. It was first attacked with a Carpenter 6-inch A. P. shell, with a striking velocity of 1,620 foot-seconds. This projectile struck the plate on one of the cracks and broke up into small pieces, the point remaining welded to the plate. Estimated penetration 2 inches. Plate was flaked to the right of impact 11 inches by 21.5 inches, and to the left 12 by 6 inches. Cracks were increased in depth. Plate otherwise uninjured and backing unharmed. The plate was next attacked with a Wheeler-Sterling 6-inch A. P. shell, with a striking velocity of 1,816 foot-seconds. Projectile smashed on plate, point remaining welded. Estimated penetration, 3 inches. Plate slightly dished around impact, one fine surface crack concentric with the impact and just below it. Otherwise plate and backing uninjured.

The *Iowa's* 15-inch curved harveyized nickel-steel barbette plate,

B–419, group 23, Carnegie Steel Company, backed with 36 inches of oak, was tested February 20 and 25, 1896. This plate was first attacked with a Wheeler-Sterling 12-inch A. P. shell with a striking velocity of 1,413 foot-seconds. This projectile penetrated 13.25 inches and rebounded 100 feet in front of plate, split from base to bourrelet, the head and one-half of the body and base being in one piece, the remainder of the projectile in the other. Plate flaked around shot hole 27 by 21 inches. Front bulge five-eighths inch high, 24 inches in diameter. No cracks developed in plate. Backing uninjured. A Carpenter 12-inch experimental A. P. shell, with a striking velocity of 1,760 foot-seconds, was then used. This projectile was broken up into small pieces, the head to the bourrelet remaining welded to the plate. Flaking 24 inches in diameter. Surface of plate star-cracked around impact. A through crack 0.75 inch wide and 11 inches deep at left edge was opened from right edge through bottom of this impact through to bottom of impact No. 1, and from middle of impact No. 1 to left edge of plate. Backing uninjured. A Wheeler-Sterling 12-inch A. P. shell, with a striking velocity of 1,727 foot-seconds, was then used. This projectile struck the plate and broke up, the head to bourrelet remaining welded to impact and projecting 15.75 inches in front of the plate. The remainder of the projectile was scattered on the ground. Probable penetration 17.25 inches. Maximum diameter of flaking 22 inches. Old crack opened out to 5 inches at left edge and 1.75 inches at right side of plate. A ragged crack, partly through, was opened from the upper side of this impact to impact No. 1. Backing remained in good condition.

Five-inch nickel-steel face-hardened plate, R–12, made for the Russian Government by the Carnegie Steel Company, was tested March 24, 1896. This plate was attacked with five 4-inch Carpenter A. P. shell, at striking velocities of 1,738 foot-seconds, 1,660 foot-seconds, 1,691 foot seconds, 1,754 foot-seconds, and 1,770 foot-seconds; and one 5-inch Wheeler-Sterling A. P. shell, with a striking velocity of 1,712 foot-seconds. This plate was accepted.

Experimental 5-inch nickel-steel face-hardened reforged plate, R–14, made by the Carnegie Steel Company, was tested March 7, 1896, at the expense of the Carnegie Steel Company. This plate was attacked with six Carpenter 4-inch A. P. shell, with a striking velocity of 1,711 foot-seconds; one Wheeler-Sterling A. P. shell, with a striking velocity of 1,800 foot-seconds; one Wheeler-Sterling special A. P. shell, with a striking velocity of 1,955 foot-seconds; and one Wheeler-Sterling 4-inch special A. P. shell, fitted with soft-steel cylindrical cap.

Eight-inch nickel-steel face-hardened reforged steel plate, R–44, made by the Carnegie Steel Company for the Russian Government, was tested May 13, 1896. This plate was attacked with six 6-inch Holtzer A. P. shell, at striking velocities of 1,857 foot-seconds 1,826 foot-seconds, 1,886 foot-seconds, 1,845 foot-seconds, 1,866 foot-seconds, and 2,149 foot-seconds, and with three 4-inch Carpenter A. P. shell, with striking velocities of 1,991 foot-seconds, 1,958 foot-seconds, and 1,909 foot-seconds. This plate passed the test.

A patent 8-inch D'Humy plate was tested July 3, 1896. This plate was composed of a heavy rectangular frame consisting of two vertical bars with four horizontal channel bars running between them. This frame was backed by a 2-inch plate. Between the horizontal channel bars were placed short vertical bars 2 inches wide, 6 inches thick, mortised at their ends into the horizontal channels. The plate was attacked with an 8-inch Carpenter A. P. shell, with a striking velocity of 1,290 foot-seconds. This projectile penetrated the plate and broke up,

wrecking the lower portion of the plate where it struck. The vertical bars immediately in front of the impact were broken and driven through, while those on either side were forced apart. The frame was broken at the corners and a hole 18 by 16 inches made in the backing plate.

The following 3-pounder shield plates, five-eighths of an inch thick, have been tested:

B-23¼, a face-hardened plate, made by the Carnegie Steel Company, was attacked with 1-pounder A. P. projectiles at velocities from 571 to 1,712 foot-seconds, and it was found that this plate would keep out projectiles fired from long 1-pounders with a muzzle velocity of 1,750 foot-seconds:

1. The plate being inclined at an angle of 40° and the impact distant from the supports, at ranges greater than 105 yards.

2. Under the above conditions, when the impact was close to the supports, at ranges greater than 240 yards.

3. The impact being normal, at ranges greater than 1,975 yards.

An experimental plate, containing 5 per cent of nickel, made by the Bethlehem Iron Company, was attacked with 1-pounder projectiles at velocities from 797 foot-seconds to 1,875 foot-seconds, and it was found that this plate would keep out 1-pounder projectiles as follows:

1. The plate inclined at an angle of 40° and the impact distant from the supports at ranges greater than 26 yards.

2. When the impact was normal, at 482 yards.

An experimental hard-faced plate, B–280, was attacked with 1-pounder projectiles at velocities from 571 foot-seconds to 1,712 foot-seconds, and it was found that this plate would keep out 1-pounder projectiles as follows:

1. The plate being inclined 40° with the horizontal, at ranges greater than 55 yards.

2. The impact being normal, it will not keep out the shell even at ranges greater than 2,600 yards.

Two experimental nickel-steel shield plates, C and D, were each attacked with 1-pounder projectiles with striking velocities from 797 foot-seconds to 1,879 foot-seconds, and they would keep out 1-pounder projectiles as follows:

1. The plates being inclined 40° to the horizontal, they can not be penetrated.

2. The impact being normal, at ranges greater than 1,482 yards.

The following plates, whose ballistic tests appeared in last reports, have since been destroyed in tests of projectiles, tests of powder, or experimental tests:

The *Massachusetts'* 18-inch harveyized nickel-steel side-armor plate No. 5983–B. I. was destroyed in the test of two Carpenter 13-inch A. P. shell, lot 9, striking velocity 1,800 foot-seconds.

The *Oregon's* 18-inch harveyized nickel-steel side-armor plate B–291 was destroyed in test of two Johnson 12-inch A. P. shell, with and without cap, at a striking velocity of 1,926 foot-seconds, and two 8-inch Johnson A. P. shell, with and without caps, at a striking velocity of 2,000 foot seconds.

The *Iowa's* curved 7-inch harveyized nickel-steel plate B–389 was destroyed by two Carpenter experimental 8-inch A. P. shell, with striking velocities of 1,800 foot-seconds, three Johnson 6-inch solid shot, with soft steel caps, one with cap of aluminum alloy and two without caps, at a striking velocity of 2,100 foot seconds, and one with cap and one without cap at velocity of 858 foot-seconds, two Wheeler-Sterling 6-inch A. P. shell at velocity of 2,100 foot-seconds, and one at striking velocity of 858 foot-seconds.

Six-inch experimental harveyized nickel-steel plate B-213 was destroyed by four 6-inch Johnson solid shot, fitted with soft-steel caps, fired at a striking velocity of 2,100 foot-seconds.

The *Brooklyn's* 4-inch curved harveyized nickel-steel plate No. 958½ was destroyed by two Wheeler-Sterling 6-inch experimental shell at striking velocities of 1,600 foot-seconds and 1,700 foot-seconds.

PROOF OF GUNS.

The following guns have been proved with service rounds during the last year:

Four-inch R. F. guns Nos. 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, and 87, Dashiell mechanism.

Four-inch R. F. guns Nos. 108, 109, 110, 111, 112, and 114, and 4-inch R. F. gun No. 21.

Five-inch R. F. guns Nos. 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, and 83, Dashiell mechanism.

Five-inch R. F. gun No. 87, Fletcher mechanism.

Six-inch R. F. guns Nos. 133, 137, 138, 139, and 140, Fletcher mechanism.

Eight-inch B. L. rifles Nos. 30, 31, 32, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63.

Ten-inch B. L. rifle No. 26.

Twelve-inch B. L. rifles Nos. 9 and 10.

Thirteen-inch B. L. rifles Nos. 6, 7, 8, 9, 10, 11, 12.

Six-inch R. F. gun No. 137, fitted with Fletcher breech mechanism, was subjected to pressures of 13, 15, 16.8, 17.6, and 20.5 tons, after which the breech mechanism was found to work more easily than before the test.

Eight-inch B. L. rifle No. 42, fitted with old design breech plug, mounted on 8-inch turret mount, was subjected to chamber pressures from 15.6 tons to 25.6 tons. On examination after the highest pressure it was found that the wedge of the block had been blown open, the primer and extractor blown out, and the plug tray unlatched sprung violently against the gun, then rebounded to almost latching position. The escape of gas had been perfectly checked, but a crack 2 inches long was found in the plug. The maximum recoil during this test was 20.5 inches, with the pressure at 16.4 tons. The design of this 8-inch plug has since been changed and no further trouble has been experienced under high pressures.

A 3-inch field gun, with hydraulic recoil, spring return mount of the sleeve pattern has been tested. This gun has the Fletcher breech mechanism, and the gun and mount have finally been found to be satisfactory, some trouble having been experienced at first with the recoil system, which was overcome by increasing the size of the openings in the piston and the strength of the spring.

In the test of common shell, fitted with Maxim detonator and with Maxim fulminate compound, 6-inch B. L. rifle No. 132 was totally ruined, the shell exploding in the bore of the gun and expanding the tube and cracking the jacket.

THE EFFECTS OF BLASTS OF GUNS.

The effect of the blast, etc., on a person stationed in the central sighting hood of the proposed double turrets of the *Kearsarge* and *Kentucky* was tested, and it was found that they were less when firing the 8-inch gun over this sighting hood than they were when outside the hood and near the breech of the gun.

RESISTANCE OF TORPEDO-BOAT COAL BUNKERS.

The resistance of torpedo-boat coal bunkers to penetration by 1-pounder and 6-pounder A. P. projectiles has been tested. It was found that a 1-pounder projectile with a striking velocity of 1,800 foot-seconds would enter a bin of hard coal 55 inches thick from 31 to 39 inches, and the same bin filled with soft coal 41 inches to 53 inches. A 6-pounder projectile would pass entirely through this bin, filled with either kind of coal, at striking velocities over 800 foot-seconds.

The following mounts have been tested since last annual report:

The *Iowa's* 12-inch spring-return turret mount No. 1, Mark III (right).

The *Monadnock's* 10-inch hydraulic turret mount No. 18, Mark II (left).

Eight-inch turret mounts, Mark VII, Nos. 39 (right), 30 (left), 31 (left), 40 (right), 38 (left), 43 (right), 32 (left), and 47 (right).

Eight-inch turret mounts, Mark VI, Nos. 42 (left), 45 (right), 50 (right), 44 (left), 49 (right), 46 (left), 41 (right), and 48 (left).

Eight-inch turret mounts, Mark VI, Nos. 53 (right), 54 (left), 55 (right), 56 (left), 57 (right), 58 (left), 59 (right), 60 (left), 61 (right), 62 (right), 64 (left), and 63 (right).

Six-inch R. F. mount No. 125.

Five-inch R. F. mounts No. 1, No. 71 Mark VI, and No. 78 Mark VI.

Four-inch R. F. mounts No. 61, No. 73, No. 1 Mark VI, No. 77 and Experimental Mark IV, 4-inch R. F. mount No. 73, 4-inch R. F. mount No. 1 Mark V, and 4-inch R. F. mount No. 108.

The 8-inch B. L. R. turret mounts have all shown defects in the elevating gear, the shafts bending and jamming. This defect has finally been overcome by a slide and guide which supports the vertical shaft.

New pattern 4-inch and 5-inch pedestal mounts, Mark IV, have been thoroughly tested and found to work satisfactorily in every respect.

CASES.

Five-inch R. F. cartridge cases, representing lots 1 to 30, have been tested and accepted, together with the electric primers accompanying them, with the exception of several lots of primers, which will be subjected to a retest before acceptance.

A lot of seventy-four cases for the 3-inch field gun, fitted with R. F. percussion primers, has been tested. Five rounds have been fired in the test cases without re-forming. These were furnished by the Winchester Repeating Arms Company, and are very satisfactory.

FUSES.

Eight lots of nose time fuses, made by the American Projectile Company and representing an order of 4,000, have been tested under service conditions, firing down the range. Slight changes in the method of cutting and interior construction of magazine train have rendered these fuses safe and reliable.

Further experiments with service base fuses, involving change in size of retaining wire, have been carried on from time to time, their action now being entirely satisfactory and certain. Fuses of the same pattern made at the torpedo station have been tested in the 6-pounder gun with excellent results.

Further experiments with the Smith hydraulic time fuse have not demonstrated its reliability, and the fuses do not work satisfactorily.

PRIMERS.

The service percussion primers have given entire satisfaction.

The single wire electric primers for B. L. R. guns have continued to work perfectly.

Some trouble has been experienced with the failure of the R. F. electric primers to ignite the charge, although exploding. This difficulty has been obviated by placing circular patches of strong gauze cloth in the bottom of all R. F. cartridge bags.

ELECTRIC FIRING ATTACHMENTS.

Some trouble has been experienced on account of the wearing out in constant use of some of the connections and of the firing keys in the electric firing attachments for R. F. guns. A proposed change in the design of connections and firing key will make them more durable.

The service firing batteries furnished this station do not last long, on account of constant use.

PROJECTILES.

The following projectiles were tested and accepted during the year:

Carpenter.—Thirteen-inch A. P., lot 9; 12-inch A. P., lot 6; 8-inch A. P., lot 13, and 12-inch semi-A. P., lot 1.

Wheeler-Sterling.—Thirteen-inch A. P., lot 2; 12-inch A. P., lot 1; 8-inch A. P., lots 1, 2, 3, and 4, and 13-inch semi-A. P., lots 1 and 2, and 12-inch semi-A. P., lot 1; lot 1, 13-inch, rejected.

Midvale.—Thirteen-inch A. P., lot 1.

United States Projectile Company.—Eight inch semi-A. P., lots 1 to 20 and 1 to 9 (new contract), and 6-pounder A. P., lot 1.

EXPERIMENTAL AND MISCELLANEOUS TESTS OF PROJECTILES.

Thirteen-inch.—One Midvale experimental steel common shell was fired against a 7-inch nickel steel plate with striking velocity of 900 foot-seconds, with very satisfactory results. Shell recovered whole and entire.

Ten-inch.—Two experimental Midvale steel common shell were fired against 7-inch nickel steel plate with striking velocity of 1,100 and 1,000 foot-seconds, respectively, and shell penetrated; practically uninjured.

Eight-inch.—One Johnson solid shot fitted with soft steel cap was fired against Oregon's 18-inch harveyized nickel-steel side armor plate with striking velocity of 2,000 foot-seconds. Shell penetrated 11 inches and rebounded, only slightly deformed and whole.

One Johnson solid shot without cap was fired at the same plate with 2,000 foot-seconds striking velocity. Shell penetrated 6 inches; head and point welded in plate; body smashed.

One Johnson solid shot without cap was fired at an 8-inch face-hardened plate with striking velocity of 1,696 foot-seconds. Shell smashed on plate.

Two Wheeler-Sterling shell (A. P.) were fired against 6-inch harveyized nickel-steel plate with striking velocity of 1,600 and 1,700 foot-seconds. Both shell penetrated, but broke up.

One Wheeler-Sterling shell, fitted with copper cap over point, was fired against 8-inch face hardened plate with striking velocity of 2,057 foot-seconds. Shell penetrated, but broke up, all pieces going through plate.

One Midvale 8-inch A. P. shell (experimental) was fired against 8-inch

face-hardened plate with striking velocity of 1,689 foot-seconds. Shell rebounded, cracked, and badly upset; head gone.

Midvale 8-inch A. P. shell (experimental) was fired against 8-inch face-hardened plate with striking velocity of 1,799 foot-seconds. Shell rebounded whole and set up; point fused.

One Carpenter 8-inch A. P shell (experimental) was fired against 7-inch harveyized nickel-steel plate, with striking velocity of 1,800 foot-seconds. Penetrated plate; head welded in back bulge; body shattered.

One Carpenter 8-inch A. P. shell (experimental) was fired against same plate with same velocity. Projectile broke up badly; too soft.

One Carpenter 8-inch A. P. shell (experimental) was fired against 8-inch face-hardened plate, with striking velocity of 1,800 foot-seconds. Penetrated, but broke up; part of body failed to go through plate.

Six-inch.—Five Justin high-explosive shells were tested at various times by firing into butt to determine sensibility of detonating compound and strength of carrier. The last round fired proved the ability of the carrier to withstand the shock of discharge and the method of winding the carrier an improvement.

One common shell, fitted with Maxim base plug and detonator was tested in 6-inch B. L. R. The shell was filled with wet gun cotton and Maxim detonating compound. Shell exploded in gun just forward of its seat, damaging gun. Parts of shell scattered in "valley" in front of gun.

Two Wheeler-Sterling 6-inch A. P. shells were fired against 4-inch harveyized nickel-steel plate, with striking velocity of 1,600 and 1,700 foot-seconds. Both projectiles broke up, the one with 1,700 foot-seconds penetrating plate and backing.

Six Johnson solid shot, with and without caps, were fired at 7-inch harveyized nickel-steel plate, with striking velocity of 2,100 and 858 foot-seconds, to compare effect of cap and in comparison with Wheeler-Sterling uncapped A. P. shell.

One Johnson solid shot with cap was fired against 7-inch curved harveyized nickel-steel plate, with striking velocity of 2,100 foot-seconds; angle of impact, 20 degrees. Plate wrecked; projectile broke up; penetration, 6 inches.

One Johnson 6-inch solid shot, with cap, was fired against 10-inch double-forged plate with striking velocity of 2,100 foot-seconds. Penetration 7 inches; base of shot broke off; remainder of projectile in plate.

One Johnson solid shot, with cap, was fired against same plate with striking velocity of 2,504 foot-seconds. Penetrated plate and recovered practically whole and entire.

One Johnson 6-inch solid shot, with cap, was fired against 7-inch harveyized nickel-steel plate with striking velocity of 2,100 foot-seconds. Shell penetrated; recovered whole and entire.

Several Johnson solid shot were fired down range to determine effect of cap on range of projectile. The cap made no difference in the range of projectile whatever, and the solid shot had greater range than common shell.

Five-inch.—One Wheeler-Sterling A. P. shell was fired at 3-inch harveyized nickel-steel plate, with striking velocity of 1,694 foot-seconds. Projectile broke up; penetrated plate, but no part of the shell got through the backing.

One Wheeler-Sterling 5-inch A. P. shell (experimental) was fired at 6-inch harveyized nickel-steel plate, with striking velocity of 2,250 foot-seconds. Shell penetrated plate; head of projectile lost in river.

Four United States Projectile Company experimental forged steel shells were fired against 4-inch nickel-steel plate, with velocities of 1,700-1,800, 1,900, and 2,000 foot-seconds, respectively, with varying results. The points penetrating, but shell broke up in front of plate.

Four-inch.—Two Wheeler-Sterling A. P. shells were fired against 3 inch harveyized nickel-steel plate, with striking velocity of 1,700 and 1,815 foot-seconds. Both projectiles broke up. The one with the high velocity penetrated plate and head lodged in backing.

One Wheeler-Sterling experimental A. P. shell was fired against a 5-inch face-hardened plate with striking velocity of 1,955 foot-seconds. Penetration, 2 inches; shell broke up.

A similar shell, fitted with cap, was fired against the same plate with the same velocity and penetrated plate and lodged in backing.

ORDINARY SERVICE POWDERS.

Four lots of brown prismatic power, from the California Powder Works, have been tested at this station during the last year, with the following results:

Thirteen-inch B. L. R.—C. G.-1, a sample representing 25,000 pounds, was tested in 13-inch B. L. R. and gave fairly good results, but not up to the requirements. Pressure excessive; residue more than normal and excessive.

C. G.-2, a sample representing 25,536 pounds, was tested in 10-inch and 12-inch B. L. R.'s. Powder gave excessive pressures in 12-inch gun, so sample was further tested in 10-inch B. L. R., and, as it exceeded the requirements for 10-inch powder, was accepted for use in that gun.

C. G.-3, a sample representing 17,000 pounds, was tested in 8-inch, 10-inch, and 12-inch B. L. R.'s. From the data obtained from this firing it was estimated that the service charge would give 2,030 foot-seconds, and not exceeding 15 tons in 13-inch B. L. R. As this powder fulfilled the requirements of the specifications, its acceptance was recommended.

Five-inch R. F. G.—A sample of C. B.-4 gave excellent results in the 5-inch gun and was accepted.

Messrs. E. I. Du Pont & Co. have furnished samples of brown prismatic powder for the 13-inch, 12-inch, 10-inch, and 8-inch B. L. R.'s, 5-inch and 4-inch R. F. G.'s, and also black cubical powder for the 6-pounder and 3-pounder, and fine grain powders for the heavy 1-pounder.

These powders have been tested with the following results:

Thirteen-inch B. L. R.—W. S.-6, W. S.-7, W. S.-10, W. S-11, W. S.-12, W. S.-14 were rejected as not coming up to the requirements of the specifications. W. S.-8, W. S.-9, and W. S.-13 were accepted, W. S.-9 being the first lot of powder to fulfill the requirements of the specifications.

Twelve-inch B. L. R.—V. Y.-11 was rejected. V. Y.-12 was rejected, but will be tested in the 10-inch B. L. R.

Ten-inch B. L. R.—U. F.-38 and U. F.-40 were accepted and U. F-39 rejected. A sample of U. F.-41 is awaiting test at this station.

Eight-inch B. L. R.—U. T.-38 was accepted; 100,000 pounds of a blend of U. T-42, U. T.-43, and U. T.-44, in equal parts, has been accepted. U. T.-39, U. T.-40, and U. T.-41 were rejected.

Six-inch R. F. G.—No powder has been submitted for test in this gun, but 5-inch powder has been used in current work with good results.

Five-inch R. F. G.—V. Z.-36 and V. Z.-37 were accepted. V. Z.-38 was rejected. V. Z.-39 awaits test at this station.

Four-inch R. F. G.—W. G.–11 was accepted. W. G.–9, W. G.–10, W. G.–12, W. G.–13, W. G.–14 were rejected.

Six-pounder R. F. G.—U. D.–35, U. D.–36, U. D.–37, U. D.–38, U. D.–39, U. D.–40, and U. D.–41 were accepted. U. D.–42 and U. D.–43 were accepted for use in 3-pounder only. U. D.–44, U. D.–45, U. D.–46, U. D.–47, U. D.–48, and U. D.–49 were rejected.

Three-pounder R. F. G.—U. D.–36, U. D.–37, U. D.–38, U. D.–40, U. D.–42, and U. D.–43 were accepted for use in 3-pounder, U. D.–39 to be used only in case of necessity.

One-pounder heavy R. F. G.—W. A.–19 was rejected and W. A.–20 was accepted.

LARGE-GRAIN BLACK IGNITION POWDER.

S. X. F.–4 and S. X. F.–5 were accepted.

SMALL-GRAIN BLACK IGNITION POWDER.

A sample of W. C.–5 is awaiting test at this station.

SHELL POWDER.

A sample of shell powder, lot 1, 1896, was tested and accepted.

SMOKELESS POWDERS.

Samples of smokeless powders, received from the torpedo station, have been tested as follows:

A lot of 2,000 pounds of K. K. 1, intended for the 13-inch B. L. R., was tested, with excellent results, a charge of 325 pounds giving a muzzle velocity of 2,302 foot-seconds and service pressures. Two charges, one full and one reduced, have been put up and stored away for keeping test.

Two samples of smokeless powder, intended for use in 6-inch R. F. G., have been tested, with excellent results, one sample, K. F.–2, giving muzzle velocity of 2,574 foot-seconds, and one sample, L. F.–1, giving muzzle velocity of 2,546 foot-seconds.

A sample of Maxim-Schupphaus smokeless powder was tested in the 5-inch R. F. gun for information of the United States Army, Ordnance Department.

Several rounds of Torpedo Station smokeless powder K. D.–4, loaded under service conditions and kept for seven months, gave practically the same results as in the preliminary test mentioned in last report.

Two experimental samples of 4-inch smokeless powder have been tested, which gave poor results.

A sample K. C.–21 of smokeless powder was tested in 6-pounder R. F. G. and gave excellent results.

Walsrode cannon No. 32 smokeless was used in 1-pounder heavy R. F. G., with the usual excellent results.

RETURNED AMMUNITION.

The *Atlanta's* 8-inch and 6-inch charges were retested; 8-inch charges, C.–82, index 18, cut down to 120.8 pounds and reissue recommended.

Six-inch charges S. M. A.–40, index 141, recommended to be reissued for reduced charges only.

The *Chicago's* 8-inch charges of S. M. A.–7 were tested and recommended for reissue as reduced charges for 6-inch B. L. R.

Six-inch charges S. M. A.–12 were tested and recommended for reissue *as reduced charges* for 6-inch B. L. R.

Six-inch charges S. M. A.–33 were condemned.

Six-inch charges S. M. A.–35 were recommended for reissue as reduced charges for 6-inch B. L. R.

Charges marked "unknown" were used in current work of the station.

The *Chicago's* 6-pounder ammunition was tested and found fit for reissue.

The *Chicago's* 1-pounder ammunition was tested and one lot found unfit for reissue. Powder in cases damp and caked.

The *Chicago's* 37-millimeter ammunition was tested and found fit for reissue.

The *Miantonomoh's* 6-pounder ammunition was tested and not recommended for reissue.

Three-pounder ammunition was found unfit for reissue.

One-pounder ammunition was found unfit for service.

Forty-five caliber and small-arms ammunition recommended for reissue.

The *Vesuvius'* 3-pounder, 45-caliber, and small-arms ammunition tested and found fit for reissue.

The *Richmond's* 37-millimeter ammunition was not recommended for reissue.

Forty-five caliber and small-arms ammunition were fit for reissue.

The *Ranger's* 37-millimeter ammunition was tested. One lot was found deficient in velocity and not recommended for reissue. The other lot was recommended for reissue.

The *Mohican's* 37-millimeter ammunition was tested. One lot was found deficient in velocity and not recommended for reissue. One lot was recommended for reissue.

CHECK SAMPLES.

The following check samples have been tested during the year:

Six-pounder R. F. G.—U. D.–35 and U. D.–34 were tested and recommended for issue with charge unaltered.

Three pounder R. F. G.—T. W.–12 was tested and recommended for issue with charge unaltered.

The following table gives a summary of the firing done during the the last year:

Summary of all firing during the year, except smokeless powder.

Gun.	Powder tested and accepted.	Powder tested and rejected.	Number of rounds fired, all purposes.	Powder expended, all purposes.
	Pounds.	*Pounds.*		*Pounds.*
13-inch	257,000	425,000	38	17,835.55
12-inch	None.	60,000	38	13,895.76
10-inch	105,536	30,000	18	4,984.40
8-inch	160,000	180,000	176	18,092.50
6-inch	.....	.....	99	3,542.03
5-inch	32,011	25,000	210	5,051.95
4-inch	15,000	95,000	208	2,772.77
3-inch, field	.....	.....	44	53.63
6 pounder	63,300	10,700	224	401.70
3-pounder	20,000	None.	104	173.10
47-millimeter	None.	None.	None.	None.
1-pounder, heavy	10,000	10,000	87	21.50
37-millimeter	None.	None.	39	7.10
Ignition	7,000	None.	.....	876.05
Shell	30,000	None.	.....	.....
Total	699,847	835,700	1,285	67,708.04

EXPLOSION CHAMBER.

Two 8-inch shell, filled with 10 pounds of black shell powder, were exploded in explosion chamber. Both broke up into a large number of pieces, the largest piece weighing 15 pounds.

One 6-inch shell, filled with 3.25 pounds of black shell powder, and using the ordinary fuse stocks, failed to explode, the stocks blowing out each time.

One 5 inch shell, filled with black shell powder, was successfully exploded in explosion chamber after two attempts, a steel fuse plug being used instead of a brass one.

One 4-inch shell, filled with black shell powder, failed to explode under similar circumstances.

Explosions in the explosion chamber have taken place from time to time in connection with the test for acceptance of 6-pounder shell.

Experiments to determine the character of burst of 6-inch shell, and their relative values as bursting charges, were conducted in the explosion chamber. A shell, fitted with single wire electric primer for ignition and proper arrangement for checking gas and filled with 6 ounces of dry gun cotton, was successfully exploded. The shell broke up into 27 pieces, the head being the largest piece and weighing 26 pounds. The force of the explosion was quite severe. A 6-inch shell, loaded with 0.75 pound of Walsrode cannon smokeless No. 32, was exploded by using single wire electric primer, with small bag of musket powder over its mouth to insure ignition. Shell burst, the break-up being fair; 12 pieces recovered, weighing 97 pounds, the largest piece, as usual, being the head. A 6-inch shell, loaded with 0.72 pound of torpedo station smokeless shell powder, lot 1, the ignition of bursting charge being effected in the same manner as the Walsrode No. 32. Shell burst, the break-up being as good as the shell with dry gun cotton, and better than the shell with Walsrode No. 32. A 6-inch shell, loaded with 1 pound of Joveite No. 2, was exploded in the same manner as the other shell. Shell broke up into 12 large pieces, band in two pieces; largest piece weighed 19.5 pounds, smallest 2 pounds; head in three pieces. Dense nitrous fumes filled the explosion chamber, preventing entrance for some time after explosion.

SMALL-ARM RIFLE BARRELS.

Further experiments with 6-millimeter small-arm rifle barrels of the pattern intended for the Navy, and with the ammunition intended for use in it, and the 6-millimeter machine gun, have been carried on from time to time as weather permitted. Early in the year the ammunition gave trouble on account of its erratic behavior in flight and the character of the impacts at 500 and 1,000 yards. The cause of this was soon developed and the ammunition made of a very slightly larger diameter and the cylindrical body of the bullet lengthened to give greater bearing surface in rifling. This fault has been checked to a great extent, and experiments to determine the character of the rifling which gave the best results were then carried forward and exhaustive experiments made, using barrels of different twist and number of grooves. As a result of these experiments, it was recommended that the 6-groove, 1 in 7.5 inches twist, be employed with the service bullet of 135 grains weight. This weight of bullet gave the best results and is least affected by the wind. The 112-grain bullet in the 5-groove, 1 in 7.5 inches twist barrel, gave slightly higher velocities than the same bullet in the other *barrels, but no* appreciable difference in the trajectory was noted.

Three heavy Winchester barrels were received at the station for test of accuracy at 500 and 1,000 yards.

One barrel had 6 grooves, 1 in 6.5 inches twist.

One barrel had 5 grooves, 1 in 7.5 inches twist.

One barrel had 6 grooves, 1 in 7.5 inches twist.

The results with these barrels were not more satisfactory than with the lighter barrel, and the same conclusions in regard to weight of bullet and character of rifling were reached as with the lighter barrels.

Three sights of different pattern were tested at the 500 and 1,000 yard ranges. All these sights were of the strictly military pattern, but none seemed to give very good results at the ranges selected. The Barringer sight was not as well liked as the simple Winchester rifle sight. The Torpedo Station sliding leaf sight was not thought as good as the Winchester sight, but it was an improvement on the Barringer sight.

Further experiments to determine loss of accuracy due to excessive firing—in fact, the endurance of the 6-millimeter gun—were carried on and the barrel reduced in length to 28 inches. The rifling was so badly worn after 2,600 rounds that the flight of the bullets was very uncertain, and it is thought the limit of accuracy is near this point.

THIRTEEN-INCH EXPERIMENTAL TURRET TEST.

A ballistic test of the experimental *Massachusetts* 13-inch turret, fitted with a 15-inch curved harveyized nickel-steel turret plate as a target, and cast-iron plates to represent the remaining turret armor, was made. As this test was interesting, not only on account of the effect of the projectiles on the turret, but also on account of the actual measurement of the velocity of motion and the jump of the turret on the impact of projectiles, complete copies of Naval Proving Ground reports Nos. 361, of May 16, 1896, and No. 499, of September 24, 1896, together with their inclosures and sketches, are hereto appended, marked O.

PERSONNEL.

I have to call the Bureau's attention to the necessity of having at least four commissioned officers and two warrant officers (gunners) on duty at this station in order to carry on the work required properly and efficiently. During the past year the number of officers has been reduced at times, on one occasion the inspector in charge and one assistant carrying on all the experimental and routine work, without assistance, for three months. This number of officers is rendered necessary on account of at least two, and sometimes three, observers being required at the chronographs when testing powder and for velocity work, and also when occupying the several range stations in range work. The services of another gunner are very much needed in order to have some responsible person in immediate charge of the powder magazines and to superintend the making up of charges, fixed ammunition, etc.

Attention is also called to the frequent changes in the personnel, the short tours of duty of the junior officers requiring their detachment very soon after they have become familiar with their duties.

The following are the names of the officers who have been attached to this station during the past year and the distribution of their duties:

Lieut. C. P. Plunkett: Assistant inspector of ordnance; in charge of powder magazines, filling house, pressure gauges, etc., mounts and carriages, projectiles, fuses, the explosion chamber, small arms and ammunition, and all experimental work not otherwise assigned; also, member of board of inspection and observer at chronographs.

Ensign F. W. Jenkins: Was detached September 14, 1895.

Ensign M. L. Miller: Assistant inspector of ordnance; in charge of guns, sights, cartridge cases, primers, armor plates and backing, chronographs, and all electrical apparatus; member of board of inspection; was detached November 7, 1895.

Ensign Philip Williams: Assistant inspector of ordnance; reported for duty March 5, 1896, when he was assigned Ensign Miller's duties.

Ensign G. W. Williams: Reported for duty December 4, 1895, was detached December 16, 1895.

Ensign H. H. Christy: Reported for duty August 10, 1896; assistant inspector of ordnance, member of board of inspection and observer at chronographs; in charge of mounts and carriages, guns and sights.

Gunner P. Hanley: In charge of crane, handling of guns, and ordnance material; in charge of time book; general supervisor around the batteries; member of board of inspection; detached April 11, 1896.

Acting Gunner G. L. Mallery: Reported for duty April 30, 1896; relieved Gunner P. Hanley of his duties; detached May 20, 1896.

Gunner H. Sinclair: Reported for duty May 19, 1896, and relieved Gunner G. L. Mallery of his duties.

Acting Gunner L. J. Connelly: Under instruction and in charge of magazines from June 26 to July 8, 1896.

Asst. Surg. C. D. Brownell: Medical officer, detached October 10, 1895.

Asst. Surg. H. D. Wilson: Medical officer; reported October 8, 1895; detached November 11, 1895.

Past Asst. Surg. L. W. Curtis: Medical officer; reported November 9, 1895; detached February 25, 1896.

Asst. Surg. L. Morris: Medical officer; reported February 25, 1896; detached August 2, 1896.

Apothecary J. W. Morgan: Reported for duty July 27, 1896, as medical officer of the station.

Pay Clerk J. J Gering: In charge of accounts.

All the above-mentioned officers have performed the various duties required of them in a zealous and satisfactory manner.

Very respectfully, your obedient servant,

N. E. MASON,
Lieutenant, U. S. N., Inspector of Ordnance, in Charge.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

NAVAL PROVING GROUND,
Indian Head, Md., May 16, 1896.

SIR: Referring to Bureau's letters Nos. 6638 (October 11, 1895), 6947 (October 18, 1895), and 7781 (November 16, 1895), I have to make the following report of the ballistic test of an experimental *Massachusetts* 13 inch turret, fitted with a 15-inch curved harveyized nickel-steel turret plate, as a target.

FOUNDATION ON WHICH TURRET WAS PLACED.

The entire structure weighing about 500 tons, a platform to sustain such a weight was built across the "valley" from the velocity battery as follows: One hundred and twenty-eight 14-foot piles were driven into the ground inside a square about 30 feet on a side, the piles being driven in as far as they would go, or until their tops were even with the surface. Tie pieces of 12 by 12 inch Georgia pine timber were bolted to the heads of these piles about 12 inches apart, and the interstices between the tie pieces filled in with gravel thoroughly tamped down. A close laid floor of 12 by 12 inch Georgia pine timbers was then laid across these tie pieces and bolted down to them, and the circle to be occupied by the rollers of the turret was covered by 3-inch and 4-inch wrought-iron flat plates, the 3-inch plates being raised to

the same level as the 4-inch by 1-inch pieces of oak. During the placing and erection of the structure on this platform it was watched carefully, and the level of the foundation did not change in the slightest.

TURRET.

The turret structure represents the 13-inch turrets of the *Massachusetts*, without the barbette, being built in accordance with the blue print forwarded herewith. This turret structure rests on 20 cylindrical rollers, each 12 inches in diameter and 30 inches long, each roller being secured or prevented from rolling by four wrought-iron chocks or wedges.

ARMOR.

The armor consisted of a ballistic plate, 5751-B, Bethlehem Iron Company, curved harveyized nickel steel, 15 inches thick, and weighing 29.5 tons, secured to turret by twenty-four 3.25-inch armor bolts. This plate had already received two impacts from 10-inch projectiles, one 6 feet 4 inches from the left edge, 3 feet 1 inch from the bottom, and the second 9 feet 6 inches from the left edge, 3 feet 10 inches from the bottom. The remaining turret armor was represented by 10 cast-iron plates, dimensions 15 inches thick by 6 feet 9.5 inches by 8 feet 5 inches, weighing 14.8 tons each. The cast-iron plates were each secured by six through bolts. The ballistic plate, the cast-iron plates, and the top plates were all placed in position and secured after the arrival of the structure at this station, in accordance with the drawing forwarded herewith, marked No. 1, by the aid of marks and numbers placed thereon at the Washington Navy-Yard, where the turret had been completely assembled and inspected before transportation to the proving ground.

BACKING.

An 8-inch oak backing extended all around the turret, being secured against the two ½-inch steel backing plates of the turret.

DISTRIBUTION OF WEIGHT IN TURRET.

One hundred and eighty tons of pig iron were placed inside of the structure to represent, as near as possible, two 13-inch guns and mounts, as follows: About 8 tons on the shelf below the ballistic plate between each pair of girders, about 8 tons on each shelf between the girders on the rear side of the turret, about 15 tons on top of each of the outside single girders, and about 30 tons on and between the double girders in center line of turret. The remainder, about 88 tons, was placed on the bottom of the turret, between the outside girders and the walls. The sketch hereto appended, marked No. 2, shows the approximate distribution of this weight. In order to prevent any movement of this pig iron it was bulkheaded, shored, and wedged as much as possible with 2-inch planking.

APPARATUS AND GAUGES FOR DETECTING MOVEMENT OR DEFORMATION OF TURRET.

Three long vertical uprights were planted in the ground near the turret, one on each side and one in the rear. These uprights carried horizontal arms, embracing the top of the armor and bottom of the armor shelf, four wooden pins in each upright passing through holes with the

points resting on top, bottom, and face of the armor. Where these pins touched the surface it was coated with putty, so that any motion could be noted. Similar shorter uprights, carrying one pin each, resting on the face of the armor, were placed midway between the longer uprights. Five plumb bobs were hung from iron pins in the armor shelf, plumbing center punch marks on the plates of the foundation. Ten similar plumb bobs were hung from the base ring of the turret. Inside the turret nine chords were measured and the position of their ends marked, six of these chords being in the line of fire and three at right angles to it. In addition a wrought-iron "old man" of dimensions as shown in sketch appended, marked No. 3, was placed under the turret, directly in the line of fire, with its shorter hook holding against the front edge of the platform plate, with the longer hook resting against the roller path plate of the turret. This "old man" was secured to the platform by a 1.25-inch wood screw bolt 10 inches long.

Duplicate copies of photographs No. 497, 497–2, and 497–b, giving different views of the turret, ballistic plate, cast-iron plates, and uprights, are forwarded herewith.

Round 1, impact No. 3.

Gun used, 10-inch B. L. R. No. 26, 0.30 caliber; mount used, station hydraulic turret mount; distance between gun and plate, 362 feet; charge, 178.6 pounds "U. F.–37"; striking velocity (measured through screens), 1,683 foot-seconds; striking energy, 9,829.5 foot-tons; striking energy per tons of plate and structure, 19.66 foot-tons; ratio of energy to that just necessary to penetrate wrought-iron plate of the same thickness, 1.45.

Projectile.—Wheeler-Sterling 10-inch A. P. shell No. 142, lot 2, of normal weight and dimensions, hardened to 3 inches in rear of bourrelet.

Location of impact.—Projectile struck plate 8.25 inches from the left of the center line, 3.5 inches to the left of the normal line, 14.5 inches from the top edge, 36 inches to the left of old 10-inch impact No. 2, 32 inches above and to the right of old 10-inch impact No. 1. Angle of impact, 2° with the normal. This impact was about 12 inches higher than intended, probably caused by the squeezing of the wooden wedges under the rear of the mount after the gun was loaded.

Action of projectile.—Projectile smashed up on plate, point and head welded into impact.

Effect on plate.—Penetration, 9.5 inches; diameter of shot hole, 12 inches; diameter of splash and flaking, 18 inches; front bulge, about 0.50 inch. Surface of plate around shot hole flaked to a diameter of 18 inches, with star cracks. Plate above the impact was broken out to a width of 33 inches at the top edge and 12 inches at the upper edge of impact. Fine surface cracks were developed in plate, extending from the bottom of this impact to bottom of plate and from old 10-inch impact No. 1 to bottom of plate.

Effect on target structure.—Two and five-tenths inch covering plates on top of structure were raised to a maximum height of 1 inch over impact, plate being slightly distorted for a length of 3 feet on one side and 1 foot on the other side of center line of turret. The butt strap on the top of the plate slightly buckled, maximum being $\frac{5}{8}$-inch for 15 inches inside of the rear face of the ballistic plate, the strap being slightly buckled for the greater part of its length. Six bolts in the forward end of this strap were sheared off by this buckling, and a few more were loosened. No armor bolts in the ballistic plate or the cast-iron plates were broken or strained, and there was no movement of any of the

plates on the turret due to this impact. The whole structure slid directly to the rear in line of fire on top of the rollers, which remained in place, 1.75 inches, and there was apparently no revolution of the turret around its axis. A remeasuring of the chords and an examination of the armor shelf, etc., did not show any deformation of the structure. The "old man," under the forward portion of the roller path, was jumped out of position, as shown in sketch appended, instead of bending as intended. From the record obtained by the pegs in the uprights, the whole turret jumped up about 0.50 inch in front before starting to the rear. This jump so changed the point of application of force on the arms of the "old man" as to cause it to tip up instead of pulling directly to the rear, rendering the data obtained of no value.

The drawing forwarded herewith, marked No. 4, shows graphically the motion of the structure on this impact, and the tables hereto appended give the data obtained by the pegs in the arms of the vertical uprights

Duplicate copies of photograph No. 498, with this impact, marked No. 3, are forwarded herewith.

Round 2, impact No. 4.

Gun used, 12-inch B. L. R. No. 9, 35 caliber; mount used, station hydraulic turret mount; distance between gun and plate, 359 feet; charge, 355.6 pounds "W. S.-9"; striking velocity (measured through screens), 1,701 foot-seconds; striking energy, 17,069 foot-tons; striking energy per ton of plate and structure, 34.14 foot-tons; ratio of energy to that just necessary to penetrate wrought-iron plate of the same thickness, 2.9.

Projectile.—Wheeler-Sterling 12-inch A. P. shell, No. 142, lot 2, of normal weight and dimensions, hardened to 3 inches below bourrelet.

Location of impact.—Projectile struck plate 30 inches to the right of the center line, 24 inches above the middle, 26 inches from center of old 10-inch impact No. 2, at an angle of 7° 30″ with the normal.

Action of projectile.—Projectile broke up, showing coarse granular structure, head welded into plate, apex of cavity even with the surface of the plate, and the shell metal in the cavity badly cracked. Bourrelet swollen to 15 inches in diameter. Fragments of body and base rebounded to the front.

Effect on plate.—Penetration 11.50 inches (estimated). Diameter of shot hole at surface of plate, 18 inches. Diameter of splash and flaking, 24 inches. Front bulge, 0.25 inch. Plate dished over an area 4 feet square, maximum at impact, 0.50 inch. Plate was through-cracked from impact No. 3 to bottom of plate, and from impact No. 3 to and through impact No. 2, through the left side of impact No. 4 and to bottom of plate, plate being driven in on the backing 2 inches at the impact and five-eighths inch 5 feet to the right and to the left of the impact. One armor bolt above and a little to the right of the impact broken and driven to rear. The Harvey surface of the plate was flaked along the crack through the impacts, extending from top to bottom of plate. The 15-inch cast-iron plate to the right of the ballistic plate was driven 2.75 inches to the front at the bottom, 1 inch at the top, and 1⅛ inch to the right, shearing all its bolts. The result of this impact was to draw the ballistic plate 1 inch away from the 2.5-inch covering plate at the top and on its right edge. The horizontal channel beams in the rear of impact were driven to the rear and buckled, the maximum deflection being 1 inch. Eight screw-tap bolts in the top row and eight in the second row of the vertical covering plate were sheared by this impact, the heads of some of them being driven across

the turret. The bottom row of screw-tap bolts was not sheared, but badly strained. The whole target structure in rear of the ballistic plate was somewhat warped. The forward edge of the sighting-hood compartment buckled 3 inches toward the center, buckling extending over an area 2 feet deep by 4 feet high. None of the rivets in this compartment were sheared. The deck beams in the rear of the impact were uninjured. Nearly all of the bolts in the 2.50-inch top or covering plate were loosened so that they could be easily removed, but none were sheared. The turret was forced bodily to the rear 7.25 inches, sliding on the rollers, which remained in place. In addition, the turret was revolved through an angle of about 30′ to the right, as shown in the tracing and table appended hereto. No deformation of the structure was shown by a remeasurement of the chords and an examination of the whole framing.

Duplicate copies of photograph No. 499, with this impact marked No. 4, are forwarded herewith.

Round 3, impact No. 5.

Gun and mount the same as in previous round; distance between gun and plate, 359 feet; charge, 440.5 pounds "W. S.–13;" striking velocity (measured through screens), 2,000 foot-seconds; striking energy, 23,626 foot-tons; striking energy per ton of plate and structure, 47.25 foot-tons; ratio of energy to that just necessary to penetrate wrought-iron plate of the same thickness, 2.89.

Projectile.—Johnson 12-inch fluid-compressed solid-steel A. P. shot, No. 2, of normal dimensions, hard to file all over, fitted with a soft-steel cap over point, weighing 17 pounds. Total weight of projectile, 851 pounds.

Location of impact.—Projectile struck plate 34 inches from the left edge, 44 inches to the left of old impact No. 1, 36 inches from the top of the plate; angle of impact with the normal, 21°.

Action of projectile.—Projectile penetrated plate, breaking up in passing through, the largest pieces going through covering plate on rear side of turret and piercing the backing, fracturing the rear cast-iron plate. The greater part of head of shell, from bourrelet to point, dropped between the covering plate and the backing on the rear side of the turret after it had fractured the cast-iron plate. A number of other fragments of the projectile were lodged in the backing and the fracture of cast-iron plate, very few, if any, of the fragments getting through and out.

Effect on plate.—Diameter of shot hole, 12.25 inches; depth, 19 inches. Interior of hole ragged, the projectile evidently turning toward the normal as it passed through. The metal was flaked away from the surface of the plate to a diameter of 24 inches. A peculiar hole, 1.75 inch deep and 6 inches long, was made on right side of impact. The metal of the plate directly underneath the impact was forced to the front 4 inches. Front bulge 28 inches in diameter, plate slightly dished. The old cracks were opened still farther. The plate was cracked from this impact to impact No. 1, and three cracks opened out from this impact to the left edge of the plate, the middle one being 0.50 inch. The plate was forced in on the target structure five-eighths inch at the left and 1 inch at the right edge. Back bulge broken out all around to a diameter of 24 inches, pieces being driven through the turret and striking the beams and covering plate on the other side.

One armor bolt just below impact gave way with the back bulge, and was driven across the turret. One armor bolt just above and to

the right of impact badly bent, but still holding. Two more armor bolts to the left of impact slightly bent, but still holding. The wooden backing in rear of impact carried away and badly squeezed and splintered; size of hole 24 by 18 inches. The plating behind the backing was folded back and completely wrecked over an area 3.5 feet square, the two layers of 0.50-inch plating being folded back a distance of 24 inches at the bottom, 20 inches at the left side, 10 inches at the right, and 12 inches above the impact. The covering plates in rear of the impact were twisted and ruptured badly, being split and bent back to a distance above the impact 3 feet to the left and 2 feet to the right. Rivets were sheared and flew all over the turret, leaving their marks on the interior. Portions of the channel beam, forming the structure in rear of the impact, 3 feet long, were ripped off and thrown to the rear, one portion landing on the opposite side of the turret and one portion being driven into the hole made by the head of the shell as it passed into the backing on the opposite side.

The second transverse deck beam from the front has a hole in it, also the marks where several pieces of flying fragments struck it. The hole is jagged, 7 inches in diameter, the beam itself being deflected 3 inches to the rear of its normal position. The vertical covering plates, directly in rear, on the opposite side of the turret from the impact, contain eighteen holes and numerous deep gouges and other marks of flying fragments. These are well clustered at about the same height above the floor of the turret as the original impact on the opposite side. The ends of some of the pieces of pig-iron ballast were broken off, showing that they had been struck by some of the fragments with considerable force. The turret structure over an area of 4 square feet, where the fragments struck, was badly wrecked. The largest hole in the vertical covering plate, backing plate, and backing, caused by the head of the shell, was elliptical in shape, and 23 by 12 inches.

The end of the deck beam, where it turned down to secure against the framing, was sheared square off and carried into the hole. The edges of the plating around the impact were bent to the rear 11 inches. The wooden backing was wrecked and splintered to a diameter of 36 inches. The 15-inch cast-iron plate was badly cracked and wrecked, two large pieces of plate being thrown to the rear, one into the sand bank and the other dropping to the ground just in rear of the platform. These two pieces left a triangular hole in the plate 48 inches high and 48 inches wide.

All six of the armor bolts were broken, and the plate was forced bodily to the rear, 9 inches at its left edge, 3.5 inches at its center, and 2 inches at its right edge.

The cast-iron plate to the left of the ballistic plate was forced to the front $1\frac{3}{16}$ inches and moved to the left $\frac{7}{8}$ inch, the plate being drawn about $\frac{3}{8}$ inch away from the covering plate at the top.

All of the bolts in 2.5-inch top plates and butt straps were loosened so that they could be readily removed by hand.

This impact moved the center of the turret to the rear at an angle of 7° and 57′, with the line described by the center during the two previous impacts. The turret revolved around its center to the left through an angle of 2°.

The tracing and the table, giving the movements of pegs on the arms, hereto appended, show the motion of the turret caused by this impact. The turret structure as a whole showed no signs of deformation, either by measurement of chords or on examination.

Duplicate copies of photograph No. 500, with this impact marked No.

5, of photographs Nos. 501 and 501–*a*, showing the interior, and No. 501–*b*, showing the rear plates, are forwarded herewith.

Very respectfully, your obedient servant,

N. E. MASON,
Lieutenant, U. S. N., Inspector of Ordnance in Charge.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

Movement of pins in the uprights around experimental turret.

THIRD IMPACT.

	Pin driven out.	Turret moved back.
East:	*Inches.*	*Inches.*
No. 1	3/32	1 3/32
No. 2	1 1/16	1 1/16
No. 3	1 1/16	1 1/16
No. 4	1/32	1 1/32
West:		
No. 1	1/32	1 1/32
No. 2	1/16	1 1/32
No. 3	3/32	1 1/32
No. 4	1/16	1 1/32
North:		
No. 1	1/8	1 1/8
No. 2	1 1/8	1/8
No. 3	1 3/32	1/8
No. 4	3/32	1 1/8
South	1/8	1 1/16
East	1 1/4	1 3/32
North	1	1 1/16
West	.....	1 1/16

FOURTH IMPACT.

	Pin driven through.	Turret moved to rear.
East:	*Inches.*	*Inches.*
No. 1	3/32	9
No. 2	1 1/16	9
No. 3	1 3/32	9 1/2
No. 4	1/8	10
West:		
No. 1	1/16	5 1/8
No. 2	1/8	5 1/8
No. 3	1/8	5 1/8
No. 4	1/4	7 1/16
North:		
No. 1	1/4	4
South	6	5 1/2
East	3 1/2	6 1/2
North	4	2 1/2
West	2 1/2	2 1/2

FIFTH IMPACT.

	Pin driven through.	Turret moved back.
East:	*Inches.*	*Inches.*
No. 1	1/16	2 1/2
No. 2	1/4	2
No. 3	1/16	1 1/2
No. 4	1/8	1 1/2
West:		
No. 1	1/8	16 1/2
No. 2	1/4	16 1/2
No. 3	1/8	16 1/2
No. 4	1/8	16 1/2
North (carried away)	.....	.....
South	1/4	.....
East (upright moved)	.....	.....

NAVAL PROVING GROUND,
Indian Head, Md., September 24, 1896.

: Referring to Bureau's letter No. 3997, June 3, 1896, I have to the following report of a further test of the experimental 13-inch , with 15-inch curved harveyized nickel-steel plate, 5751–B, ehem Iron Company, as a target.

› turret was replaced on the foundation in its original position, urned around so as to bring the right-hand portion of the plate al to the 12-inch gun, and arrangements perfected for measuring ctual velocity and jump of the turret when struck.

Impact No. 6.

n used, 12-inch B. L. R. No. 9, 35 calibers; mount used, station ıulic turret mount; charge, 440 pounds, W. S.–13; striking veloc- ,000 foot-seconds; striking energy, 24,015 foot-tons.

jectile.—Wheeler-Sterling 12-inch A. P. shell, No. 253, lot 3, ıing 865 pounds, of normal dimensions, and fitted a soft steel cap nches in diameter and 4.25 inches high, by the Isaac G. Johnson ›any, the interior of the cap being coated with a thin coat of ıite mixture, the cap being screwed on to the shell by three set s, fitted into holes which had been drilled into the point of the ctile.

:ation of impact.—Projectile struck plate normally 34 inches from ct No. 4, 39 inches from impact No. 2, 36 inches from right edge, 5 inches from the bottom.

:ion of projectile.—Projectile penetrated plate, backing, center ıead, and opposite side of the turret, probably breaking up as it d through the center bulkhead, point penetrating the rear side of ırret, knocking off the cast-iron plate and going up into the woods, › it has not yet been found. The base and 4 inches of the body lodged in the backing, just showing through the rear, having k below and to the right of the point of exit of head.

'ect on plate.—Diameter of hole, 12 inches; interior fairly smooth; ster of splash and flaking, 24 by 29 inches; front bulge, 2 inches 22 inches in diameter; back bulge, 32 inches in diameter and ›n out all the way around. Plate through cracked from this ct to impact No. 4, and thence to bottom of plate, where crack led to make a triangle at bottom, immediately under impact No. 4. her through crack was developed from top of plate to left edge of ct No. 2; a partially through crack from right edge of this impact e right edge of the plate. All of the old cracks in plate were ›d out still farther. The cast-iron plate No. 2 on the right of the ıtic plate was cracked through middle, from top to bottom. One r bolt, just over this impact, was carried away with the back bulge driven across the turret. A second armor bolt near the impact :arried away, but held by the plating just in rear.

'ect on structure.—The two thicknesses of one-half-inch plating ıd the backing were penetrated, the edges at impact being torn, ed, bent, and wrecked completely, with all bolts over an area of ches square sheared, the plates folded back to the rear 24 inches e bottom, 27 inches at the top, 32 inches at the right side, and 24 s at the left side. Six-inch channel beam, directly in rear of tar- ıd forming the framing, was sheared, and the two ends bent back, ' twisted and ruptured. Six-inch channel beam, just below impact, ›adly bent and driven to the rear 3 inches, but not fractured, nearly

all the bolts being sheared. The two 10-pound covering plates, whose junction came just in rear of impact, were badly wrecked. The lower one was pulled off clean, all its bolts sheared, and thrown into the middle of the turret, being bent nearly to a right angle, with the lower half torn partly through. The upper plate was split down the middle, and also to the right of the middle, the three parts holding at the upper joint to the top of the turret, with these parts folded back against the roof.

The wreckage of the framing behind the armor extends inward 42 inches and covers an area 7 feet square. The projectile, after leaving the plating behind the impact, struck the center bulkhead 80 inches from its junction with the frame of the turret, penetrated just above the steps and platform between the bulkheads, tearing out a hole 60 inches long, 54 inches wide, and shaped like an arrowhead, the point of the arrow being to the rear. The projectile evidently broke up between these two bulkheads, the pieces passing out through the farther side, tearing a hole 48 inches long and 24 inches wide, irregular in shape, but nearly rectangular, the edges being bent 1 foot away and outward from the bulkhead. The lower hinge and framework of entrance to compartment between bulkheads was completely wrecked. The head of the projectile struck the opposite side of the turret, 52 inches to the left of the impact of the Johnson shot in round 5 and 30 inches from the top of the turret, the point of impact being on left edge of the cluster of dents and holes made by the fragments of shell, plate, etc., of the Johnson shot in the previous round. The base of the shell and 4 inches of the body struck 33 inches from the Johnson shot and 33 inches above the armor shelf and penetrated the covering plate, plating behind armor, and lodged in the backing.

Sixty-four pieces of angles, plates, butt straps, etc., none larger than 6 inches square, and some very small; 2 butt straps 30 inches long, 62 pieces of plate metal, being mostly back bulge; 4 pieces of shell metal, the largest being the base and 4 inches on body, were all recovered from the inside of the turret. Nearly all of cast-iron plate No. 7, which had been cracked and wrecked by the Johnson impact, was dislodged, and one-half of cast-iron plate No. 8 was broken off and thrown down. The extreme point of the Johnson shot from impact No. 5 was recovered in the backing, the point apparently uninjured and of normal dimensions, the fragment containing one of the holes into which the cap was screwed.

Duplicate copies of photograph No. 531, showing impact, No. 532 and No. 532*a*, showing interior views of the turret, and No. 533, showing the cast-iron plates in rear, are forwarded herewith.

Velocity and jump of the turret.—A memorandum with inclosures A, B, C, D, E, and F, submitted by Ensign Philip Williams, giving a description of the method of measuring the velocity and jump of the turret, together with the data obtained, is forwarded herewith. Unfortunately, the velocity was much slower than expected, so that the station Boulenge chronographs failed to register. The velocities recorded by the cylinder chronograph are sufficiently correct, however, especially during the first part of the movement. There was a decided downward motion of the turret on first impact, both in front and under the center, as shown on inclosures A and B, then there were three jumps of decreasing height. The total distance through which the turret moved, as recorded on the vertical plate in front, on the horizontal piece of tin under the center, and on the circuit breaker in rear, was not the same, the difference being probably caused by the turret

assuming an elliptical shape on impact. The wave lines on the chronograph Sheet D at the point marked × were probably caused by the vibrations of the table when the sound and vibration wave reached the office.

I have to request instructions as to the return of the chronograph to the Naval Academy and the break-circuit chronometer to the Observatory.

Very respectfully, your obedient servant,

N. E. MASON,
Lieutenant, U. S. N., Inspector of Ordnance in Charge.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

FURTHER TEST OF 13-INCH EXPERIMENTAL TURRET.

NAVAL PROVING GROUND,
Indian Head, Md., June 24, 1896.

Memorandum for inspector of ordnance in charge.

METHOD OF MEASURING THE VELOCITY AND MOVEMENT OF TURRET.

To measure the jump and distance of recoil a vertical plate was secured to the foundation with its faces in the line of fire. Two pencils, supported from the base ring of the turret, were pressed by springs against the faces of the vertical plate. Before firing the plate was covered with white lead and tallow. As the turret recoiled the pencils were drawn across the faces of the plate. A tracing of the line thus drawn is herewith annexed, marked A.

To measure the rotation and horizontal motion of the turret, a pointed iron rod was tapped into the base ring at the exact center of the turret, the pointed end bearing firmly on a sheet of tin upon which the line of fire had been drawn. Upon firing, the pointer was drawn across the tin, indicating by the distance between points the direction and length of the jump, and by the departure of the line thus drawn from the line of fire, the extent of the turret's rotation. A drawing of the tin thus marked is annexed, marked B.

For checking the above gauges, 10 plumb bobs were dropped from the edge of the base ring at equidistant points to center punch marks on the foundation plates.

For measuring the velocity of recoil the station chronographs and the revolving-drum chronographs, forwarded from the Naval Academy, were used. For connecting the station chronographs to the turret, the chronometer and register circuits were led through wires secured to binding posts on the sides of a wooden trough placed under the rear side of the base ring of the turret. The chronometer and register of each instrument were placed 2 inches apart and the wires of successive instruments were placed 1 inch apart. These wires were to be cut by a knife attached to the base ring of the turret, which moved through the trough as the turret recoiled. Owing to the low velocity and short distance of recoil, no observation was obtained from these instruments. The method of observing the velocity with the revolving chronographs is shown in the sketch herewith attached, marked C, and the record obtained in this manner is marked D, that portion made by the turret during the recoil being inclosed in the rectangle drawn in black ink on the record.

The chronometer furnished from the Naval Observatory was a break-circuit chronometer, and as direct connection with the coils of the pen magnet of the chronograph would have introduced the variable time element due to the demagnetization of the magnets and the action of the spring of the instrument making the mark indistinct, a relay was introduced in circuit with the chronograph with a small battery, while a large battery of 10 cells was placed in circuit with the chronograph. As it was desired to measure the velocity at several points of the recoil, the normal speed of revolution of the drum of the chronograph was too small. The governor was therefore entirely thrown off and the chronograph allowed to run at full speed. An examination of the record will show that the breaks of the chronometer were rendered distinct by the method of connection adopted.

Before firing, the instrument at the turret and the chronometer were placed in one circuit and the chronograph in another and the two circuits connected by the relay.

The instrument used at the turret was constructed as follows: A number of copper strips marked C on the sketch were mortised into a hard-wood board, the ends of the strips overlapping the edge of the board. The overlapping edges of the strips were electrically connected to each other and to a binding post D by a copper wire soldered to each of them and to the binding post. To this binding post one of the line wires from the observing instrument was led. A copper pencil, marked A in the sketch, passing through and insulated from an arm E, bolted to the base ring of the turret, was pressed by a spring against the board containing the strips already mentioned. The other line wire from the observing instrument was then connected to the pencil and the board bolted to the foundation plates in such a position that the pencil just touched the edge of the first copper strip, and the slightest movement of the turret would cause the pencil to pass on to the wood intervening between the strips, thus breaking the circuit and making a mark on the revolving drum of the chronograph. A tracing of the mark made by the pencil during the recoil of the turret is herewith annexed, marked E.

The data from the observations thus obtained are as follows:

Total length of recoil, 4.4 inches.
Maximum jump, 0.49 inch at a point 0.64 inch from the beginning of recoil.
Number of jumps, 3.
Distance of revolution of center of turret, 0.36 inch to right.

Velocities of recoil:	Inches per second.
At a point 0.38 inch from the start	6.65
At a point 1.12 inches from the start	9.01
At a point 1.86 inches from the start	9.71
At a point 2.60 inches from the start	7.06
At a point 3.34 inches from the start	[1]2.77
At a point 4.08 inches from the start	[1]1.08

The last two velocities are somewhat doubtful, on account of the difficulty of recognizing the marks on the chronograph record corresponding to those breaks. The curve of velocities combined with the curves of recoil is herewith annexed, marked F. Attention is called to the heavy vibration to which the turret was subjected during recoil. This vibration was shown on all the instruments, and it will be noticed that the length of recoil shown on the instruments differed slightly owing to these causes.

Very respectfully,

PHILIP WILLIAMS,
Ensign, U. S. N.,
Assistant Inspector of Ordnance.

[1] Approximate.

G.

REPORT OF THE MACHINE GUN BOARD FOR THE NAVAL SERVICE.

MACHINE GUN BOARD,
Washington, D. C., January 3, 1896.

SIR: In obedience to the instructions contained in paragraph 2 of the Bureau's letter No. 5232, of August 10, 1895, appointing this board, we have the honor to submit the following report:

The board has, at its several sessions, examined and tested the following guns: (*a*) Gatling, ten-barrel, hand operated; (*b*) Accles, six-barrel, hand operated; (*c*) Colt, single-barrel, automatic; (*d*) Maxim, single-barrel, automatic; (*e*) Hotchkiss, single-barrel, automatic.

From a general consideration of the needs and requirements of the naval service, the board is convinced that the advantages of a light automatic gun are so great and so obvious as to place beyond dispute the advisability of abandoning the crank gun in favor of the automatic, the production of a satisfactory and practicable gun of the latter type once assured.

Many difficulties have been encountered in the development of a self-operating gun which should successfully handle the modern small-caliber ammunition, but it would appear from the tests of the three automatic guns submitted to this board that these obstacles have been surmounted and that the problem has been brought to a solution.

It is the opinion of the board that any one of these three systems can, with more or less modification of detail, be made practicable and efficient for service use.

The Maxim gun, as submitted to the board, has one very serious defect which makes its successful operation a matter of doubt. The inventor long experienced difficulty in handling the 6-millimeter ammunition, on account of the tendency of the cases to rupture and jam the gun. While these accidents may have been due, in some instances, to faulty ammunition, the method of "breeching up" was responsible for the greater number of them. To prevent their recurrence an additional jamming movement was given to the lock, the effect of which is to force the cartridge firmly into the chamber and to maintain a heavy pressure on it until the moment of firing.

The gun is so chambered that the cartridges bring up on the neck and are forced into the chamber by the lock. As it is practically impossible to make all the cases exactly the same in profile, the length between head and neck must vary, and the mainspring of this gun must be strong enough to force home a cartridge of maximum dimensions. Against this increased strength of spring an augmented force of recoil must act, and this has been obtained by introducing gas vents in the barrel near the muzzle. These two forces, that of the spring and that of the recoil, are working against each other, and their opposition causes sluggish movement and at times complete stoppage.

While the design of the Hotchkiss gun presents some excellent features, its actual performance has not been sufficient to enable the board to determine whether its defects are radical or whether they could be remedied.

The Colt gun completed the tests in a very creditable manner, developing no other defect than one inherent in the single-barrel system without water jacket, i. e., heating to such an extent as to cause danger of premature explosions after continuous firing for some minutes.

As the powder used, Du Pont's, contained a considerable percentage of nitroglycerin, it is believed this defect will be largely removed by the adoption of the pure gun-cotton powder in contemplation for service use.

In view of these facts, and in the belief that the Colt gun, which has been offered at by far the lowest price, will prove eminently reliable and efficient under all conditions, the board respectfully recommends it for adoption as the machine gun for the naval service.

It is further suggested that, in case this recommendation is approved, the following requirements be made a part of the contract for the supply of such guns as may be required:

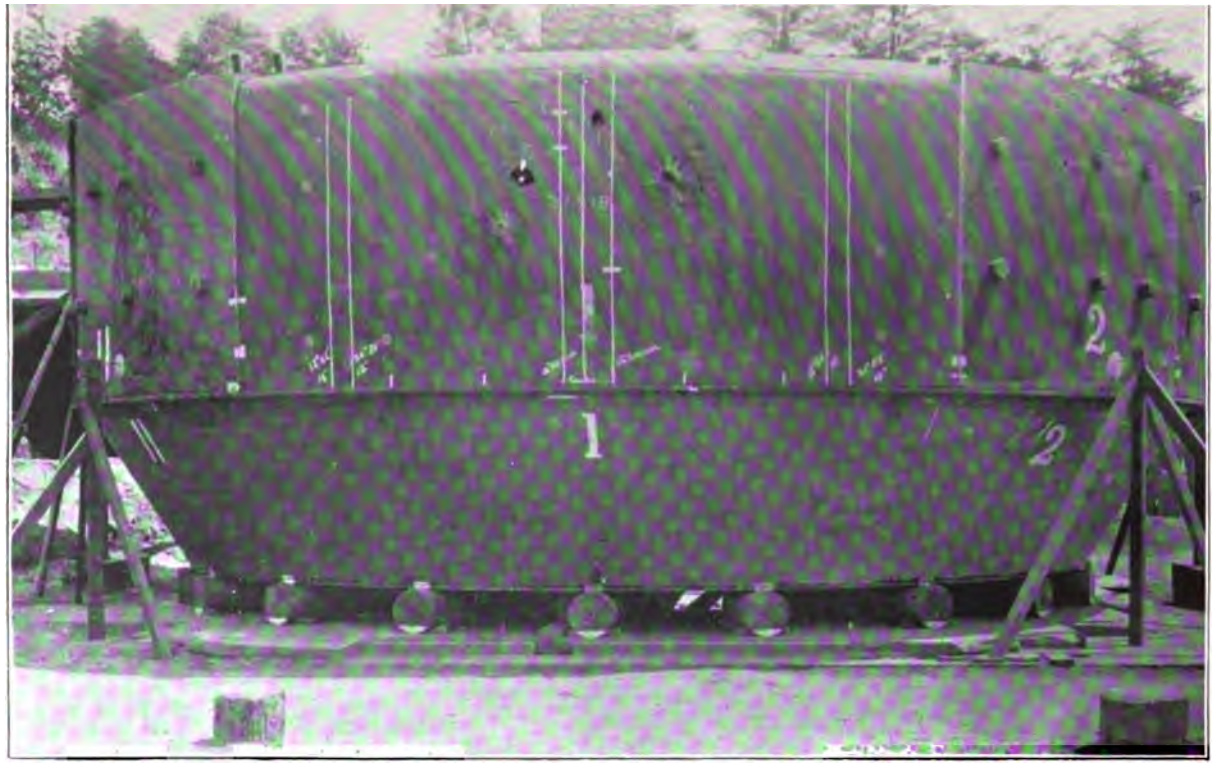
(*a*) That the mechanism be so modified as to handle the rimless cartridge which has been adopted for use in the Lee straight-pull rifle.

(*b*) That the minimum rate of fire be fixed at 400 shots per minute; each gun to be tested by firing for that time, and to be rejected in case 400 shots are not delivered without interruption of any kind.

Very respectfully, your obedient servants,

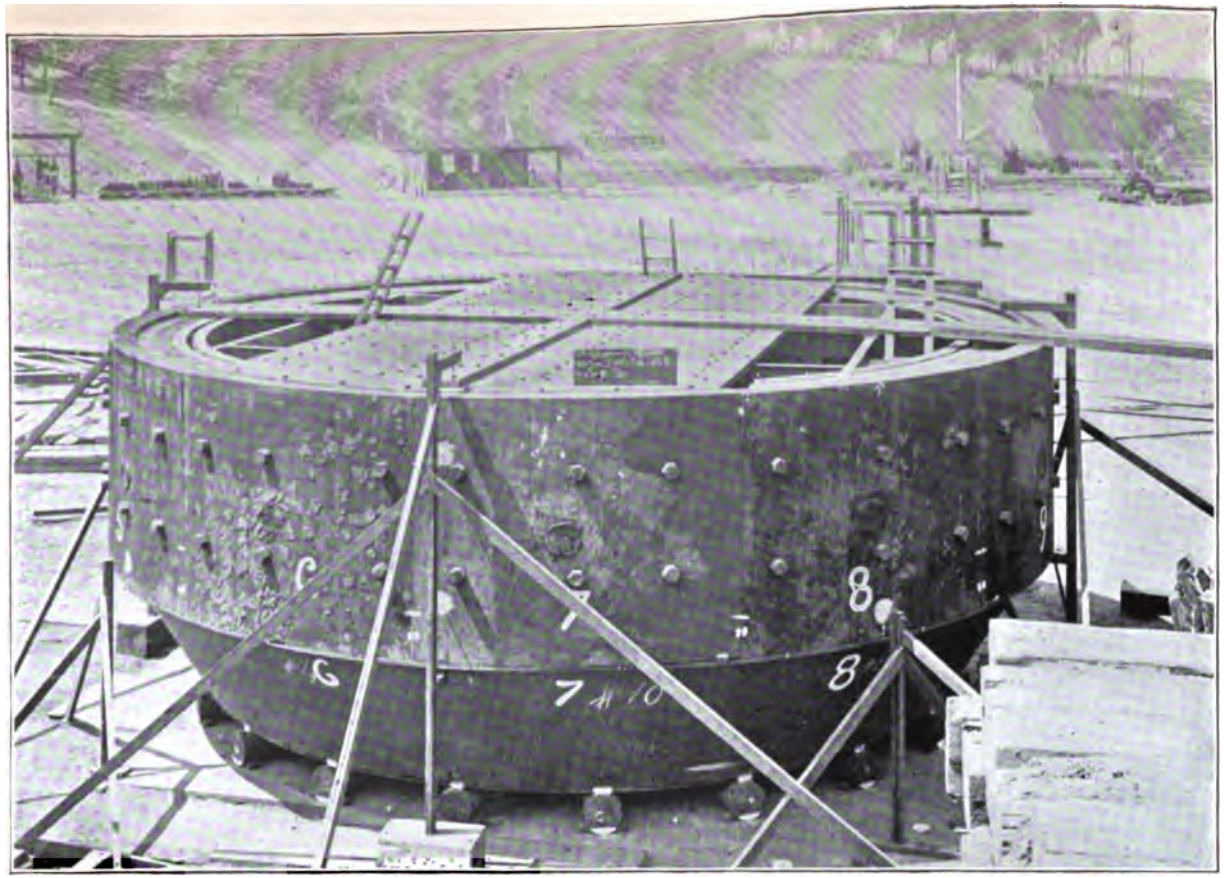
N. E. MASON,
Lieutenant, United States Navy, Senior Member.
PHILIP R. ALGER,
Professor, United States Navy, Member.
N. C. TWINING,
Ensign, United States Navy, Member.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

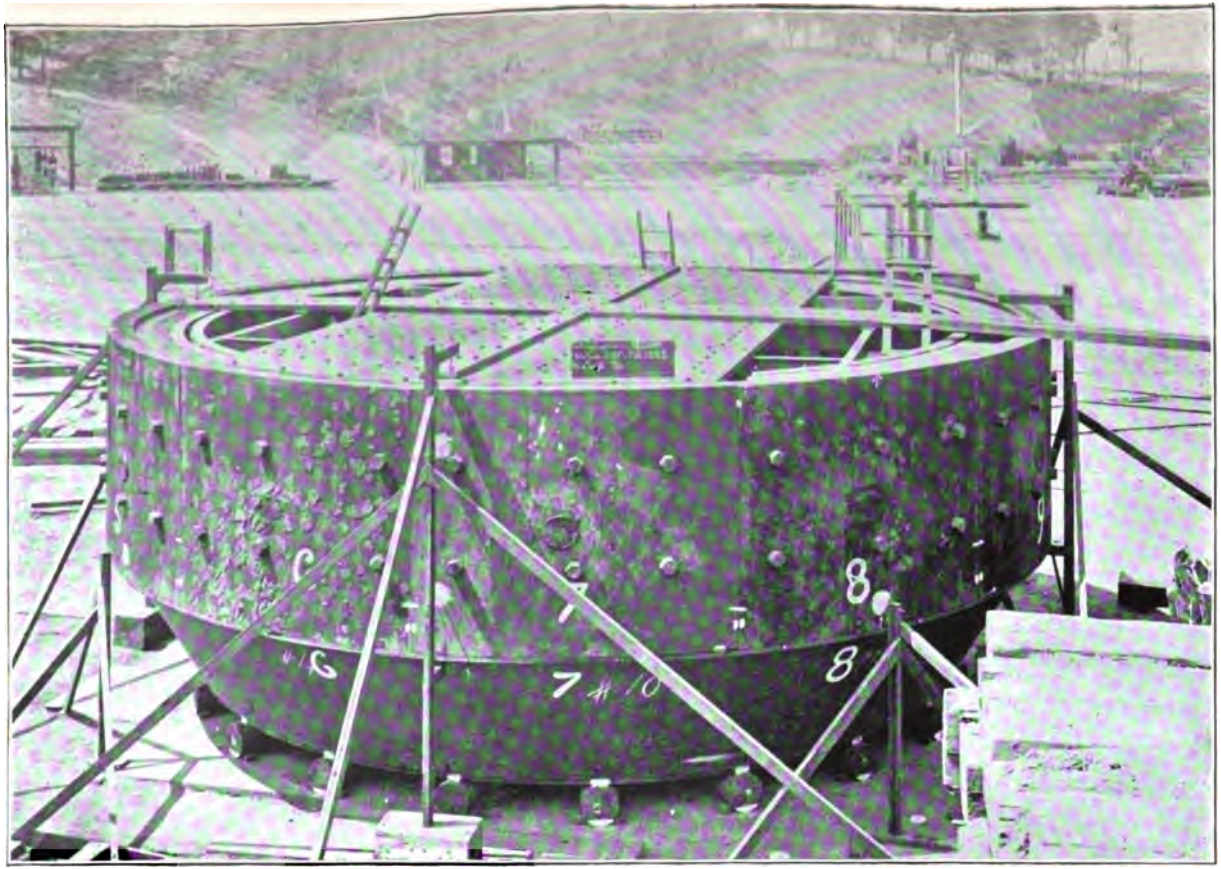


No. 497.—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. View from the front, showing turret, ballistic plate, rollers, platform, and apparatus for recording motion of structure on impact.

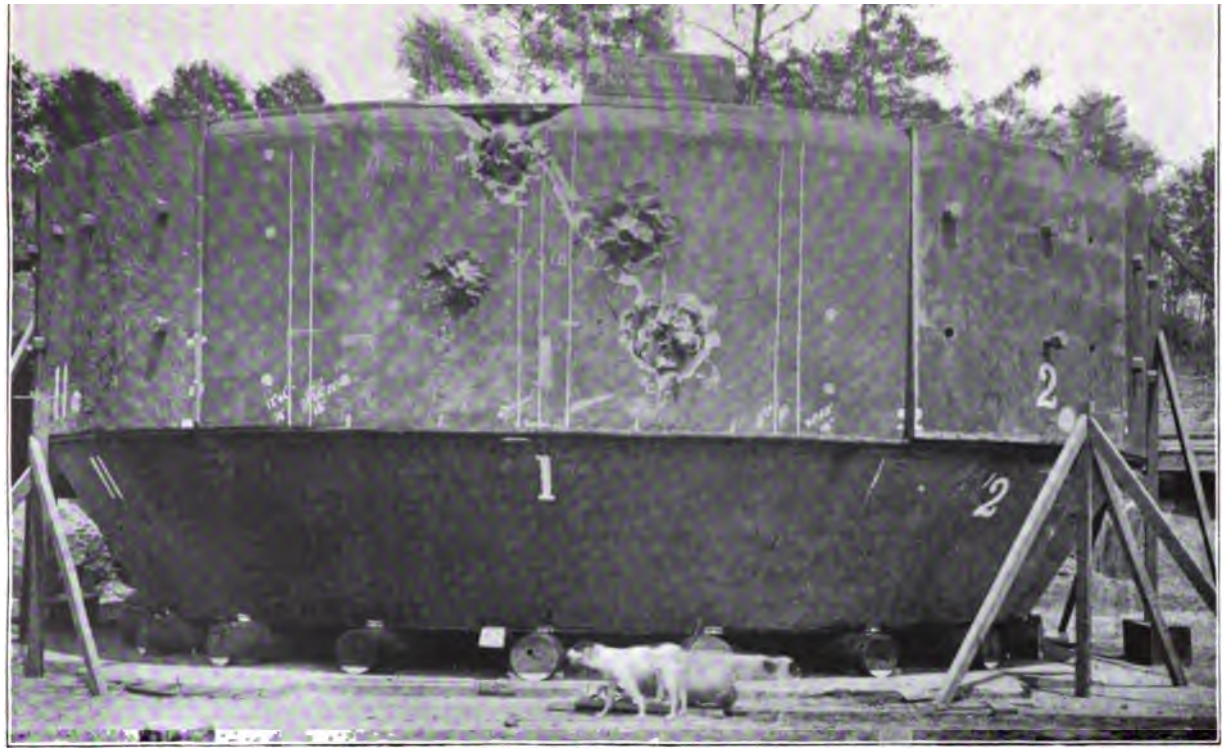
To accompany N. P. G. letter No. 361, May 16, 1896.



No. 497 (b).—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. View from above in rear.
To accompany N. P. G. letter No. 361, May 16, 1896.

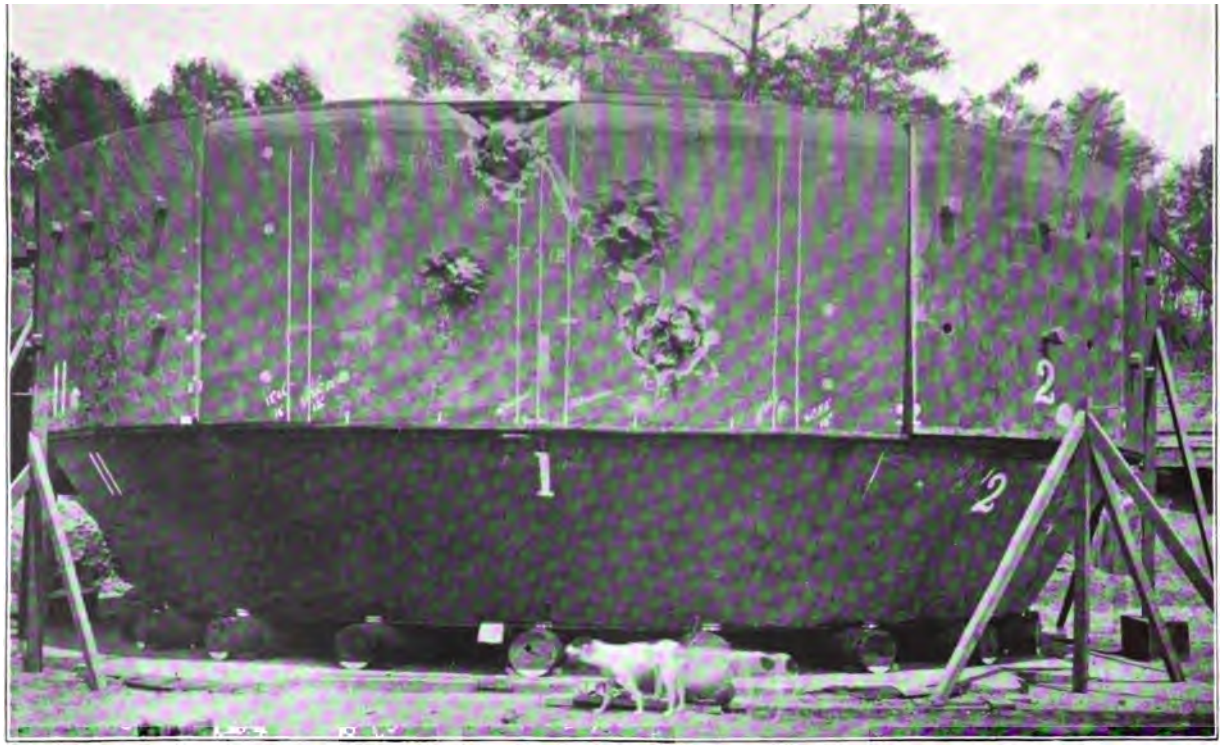


No. 497 (b).—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. View from above in rear.
To accompany N. P. G. letter No. 361, May 16, 1896.



No. 499.—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. Round 2, impact No. 4. Wheeler 12-inch A. P. projectile. Striking velocity, 1,701 foot-seconds. Striking energy, 1,707 foot-tons. Angle of impact, 7 degrees and 30 minutes, with the normal.

To accompany N. P. G. letter No. 361, May 16, 1896.



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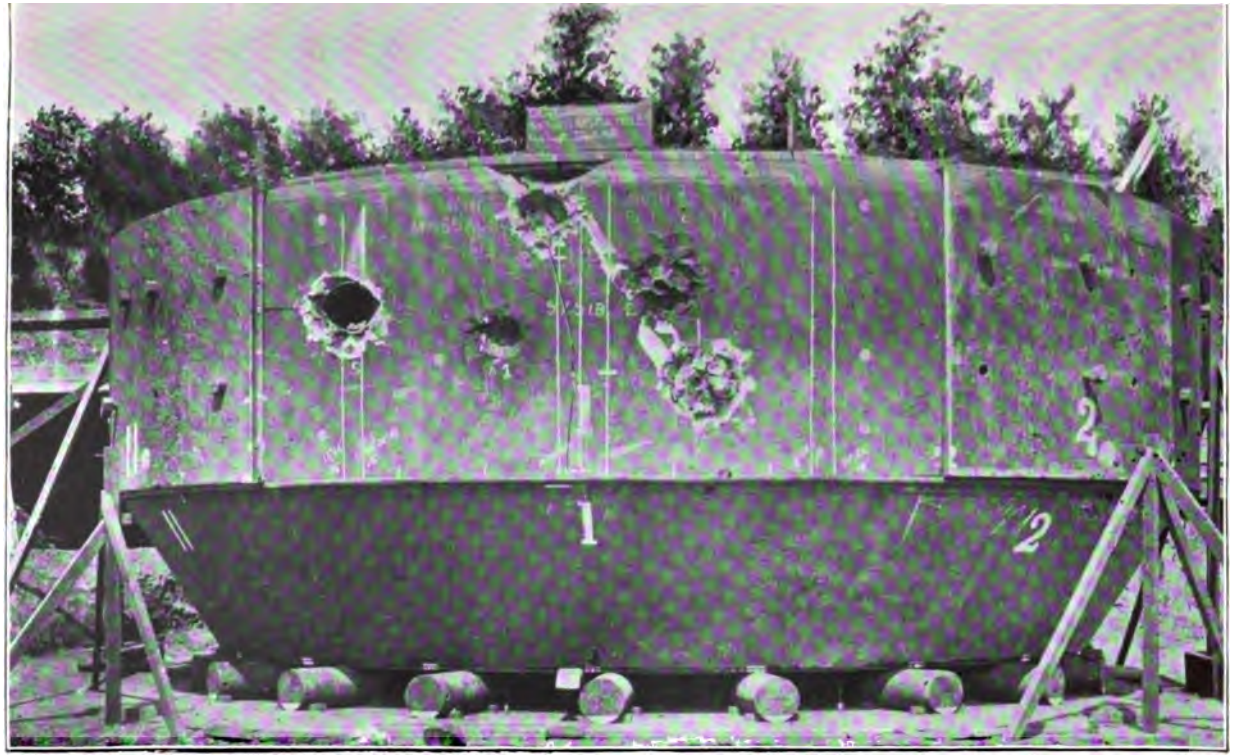
To accompany N. P. G. letter No. 361, May 16, 1896.



No. 500.—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. Round 3, impact No. 5. Johnson 12-inch solid steel shot, with soft steel cap. Striking velocity, 2,000 foot-seconds. Striking energy, 23,626 foot-tons. Angle of impact, 21 degrees, with the normal.

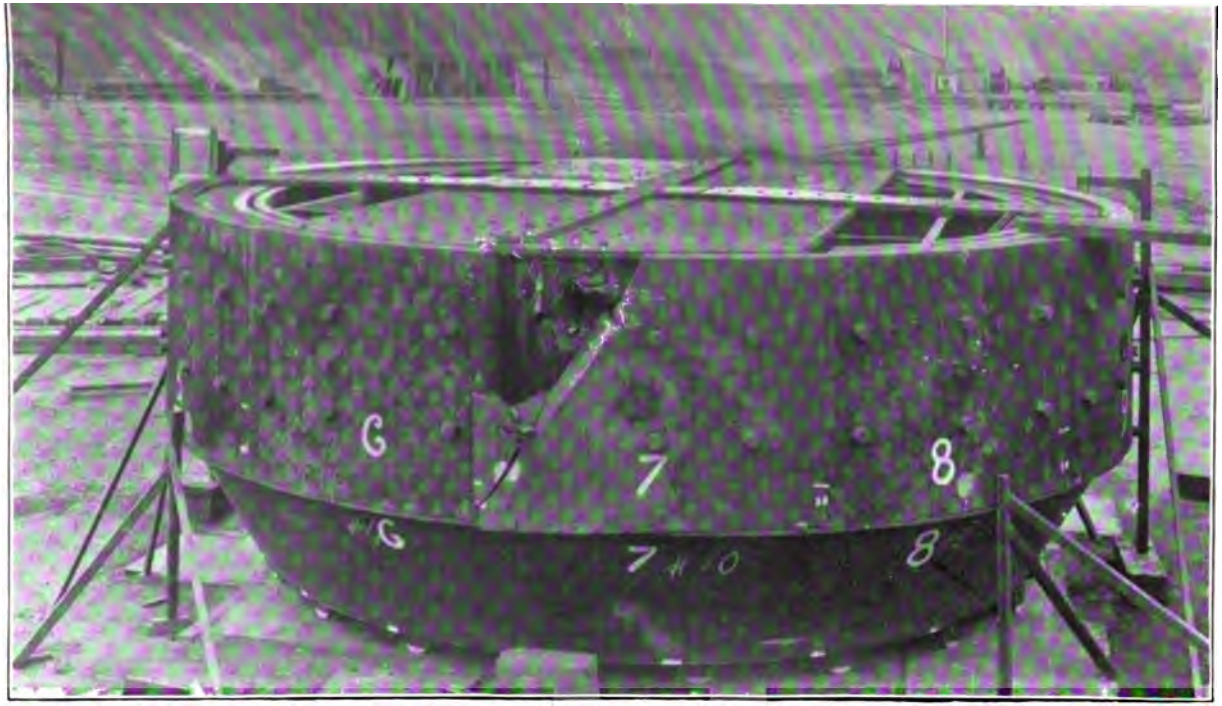
To accompany N. P. G. letter No. 361, May 16, 1896.

No. 501.—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. Round 3, impact No. 5. View from center of turret, looking toward point where projectile passed through ballistic plate and backing.

To accompany N. P. G. letter No. 361, May 16, 1896.

No. 501 (a).—Ballistic test of experimental Massachusetts 13-inch turret, with 15-inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. Round 3, impact No. 5. View from center of turret, looking toward point on rear side of turret, where fragments of projectile passed out.

To accompany N. P. G. letter No. 361, May 16, 1896.

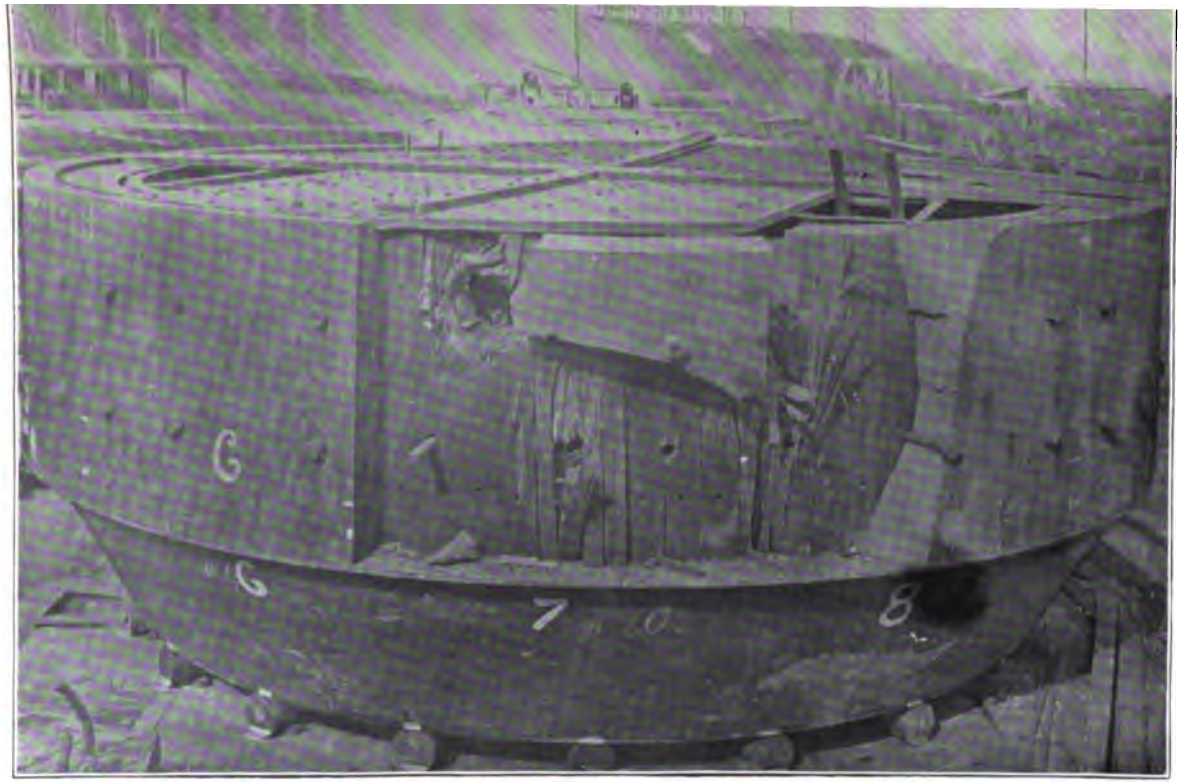


No. 501 (b).—Ballistic test of experimental Massachusetts 13-inch turret, with 15 inch curved harveyized nickel-steel turret plate, 5751-B, Bethlehem Iron Company, as a target. Round 3, impact No. 5. View from above and in rear, showing cast-iron plate destroyed by fragment of projectile.

To accompany N. P. G. letter No. 361, May 16, 1896.

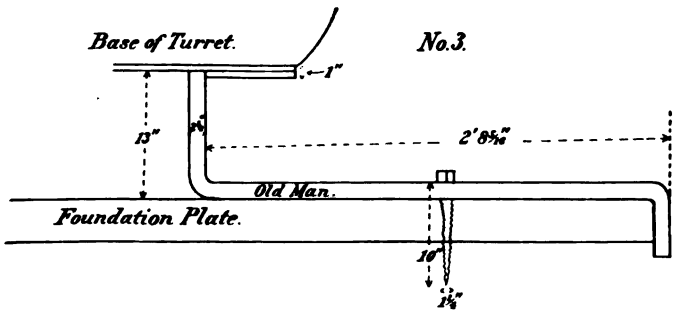
No. 532.—**Further test of experimental 13-inch turret, with 15-inch curved harveyized nickel-steel** plate, 5751-B, Bethlehem Iron Company, as a target. **Impact No. 6.** Wheeler 12-inch **A. P. shell, No. 253, lot 3, fitted with soft steel** cap by the I. G. Johnson Company. Striking velocity, 2,000 foot-seconds. Striking energy, 24,015 **foot-tons. Impact normal, penetration complete.** View inside turret, looking toward gun.
To **accompany** N. P. G. letter No. 499, **June 24, 1896.**

No. 532.—Further test of experimental 13-inch turret, with 15-inch curved harveyized nickel-steel plate, 5751-B, Bethlehem Iron Company, as a target. Impact No. 6. Wheeler 12-inch A. P. shell, No. 253, lot 3, fitted with soft steel cap by the I. G. Johnson Company. Striking velocity, 2,000 foot-seconds. Striking energy, 24.015 foot-tons. Impact normal, penetration complete. View inside turret, looking toward gun.
To accompany N. P. G. letter No. 499, June 24, 1896.



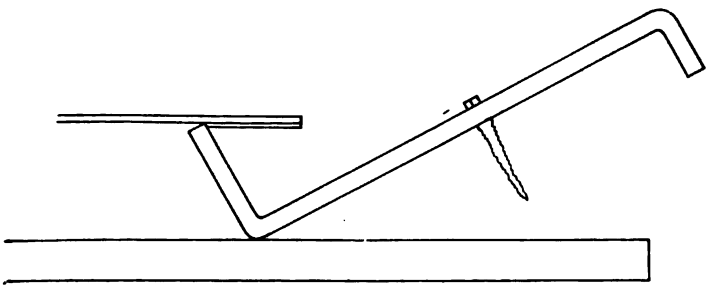
No. 533.—Further test of experimental 13-inch turret, with 15-inch curved harveyized nickel-steel plate, 5751-B, Bethlehem Iron Company, as a target. Impact No. 6. Wheeler 12-inch A. P. shell, No. 253, lot 3, fitted with soft steel cap by the I. G. Johnson Company. Striking velocity, 2,000 foot-seconds. Striking energy, 24,015 foot-tons. Impact normal, penetration complete. View from above and in rear, showing cast-iron plates.

To accompany N. P. G. letter No. 499, June 24, 1896.



Position of Old Man under Turret before firing.

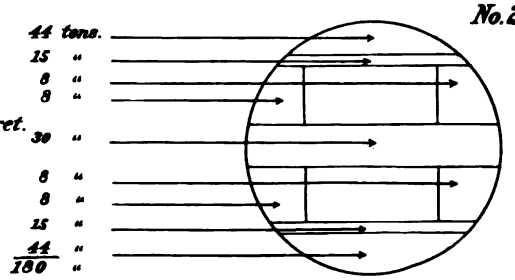
No.3.

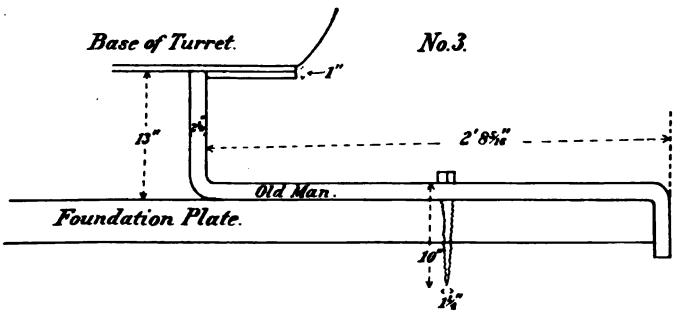


Position of Old Man under Turret after firing 1st Round.

No.2.

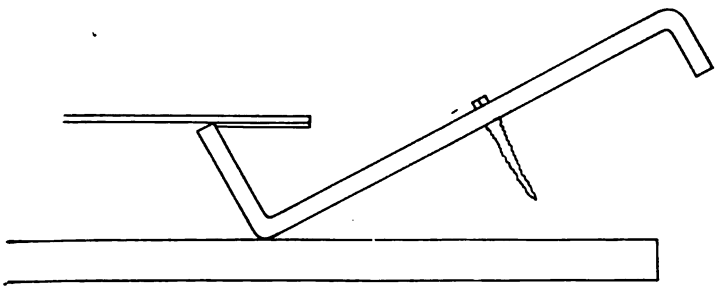
Distribution of Pig Iron in Turret.





Position of Old Man under Turret before firing.

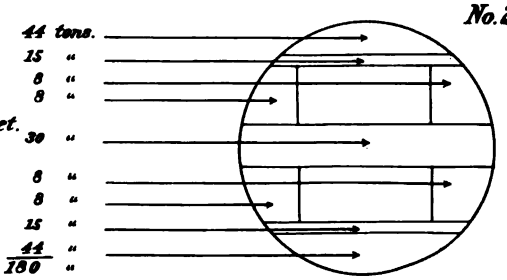
No.3.

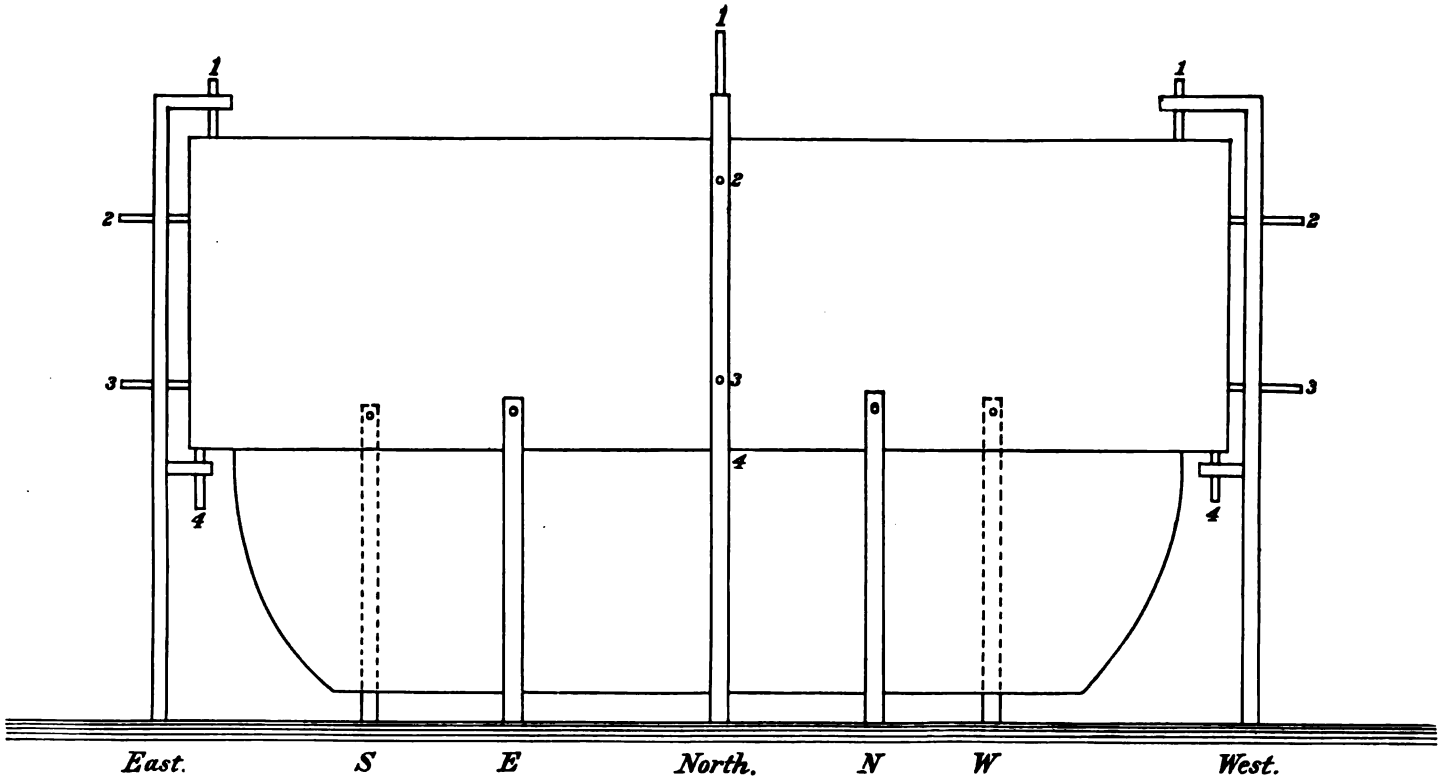


Position of Old Man under Turret after firing 1st Round.

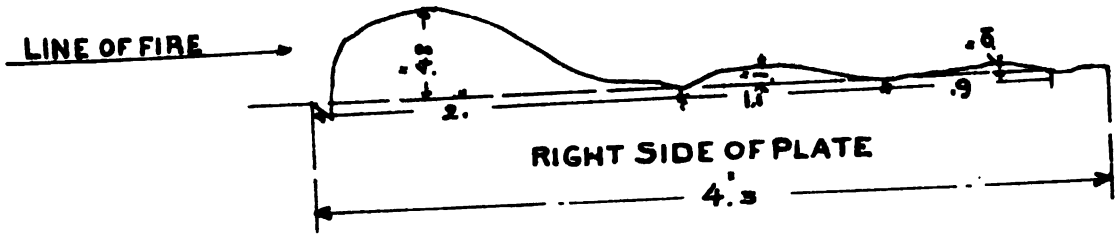
No.2.

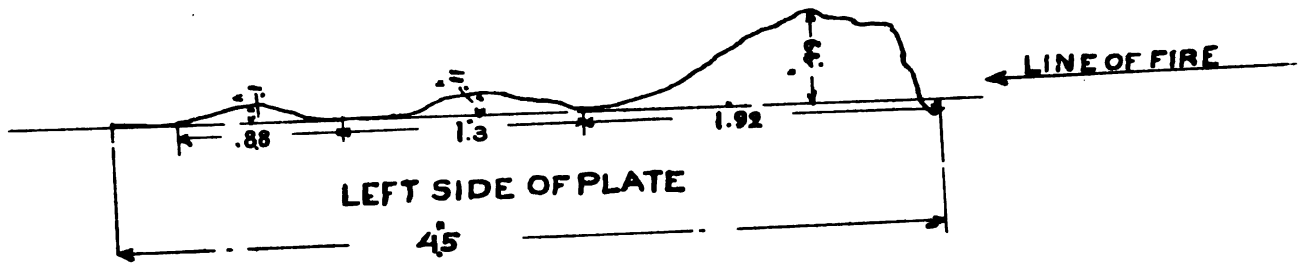
Distribution of Pig Iron in Turret.





VIEW FROM BACK OF TURRET, LOOKING TOWARD GUN.

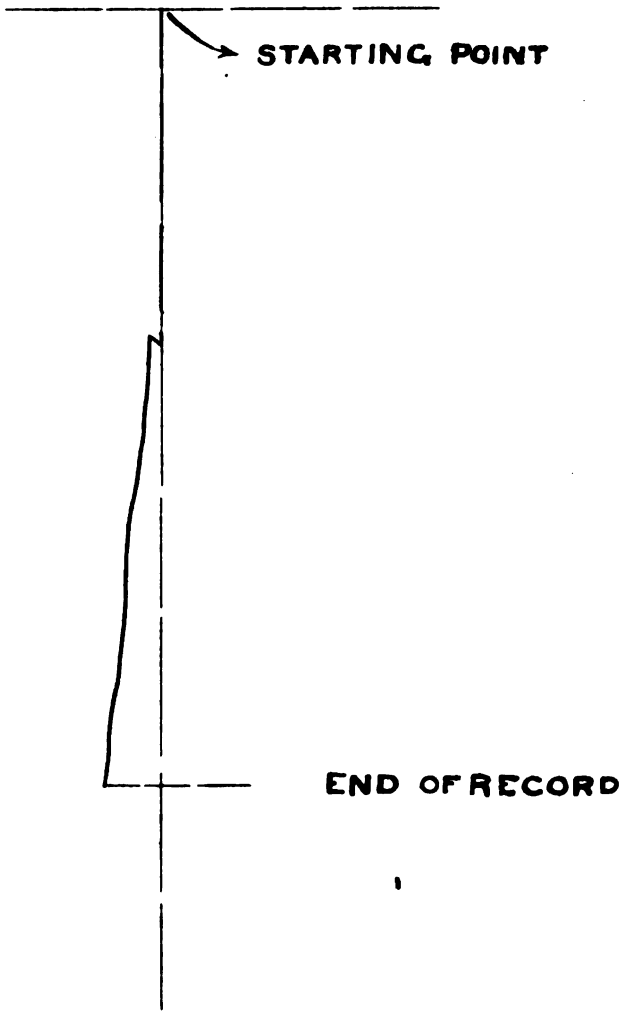




MARK DRAWN ON VERTICAL PLATE UNDER TURRET DURING RECOIL.

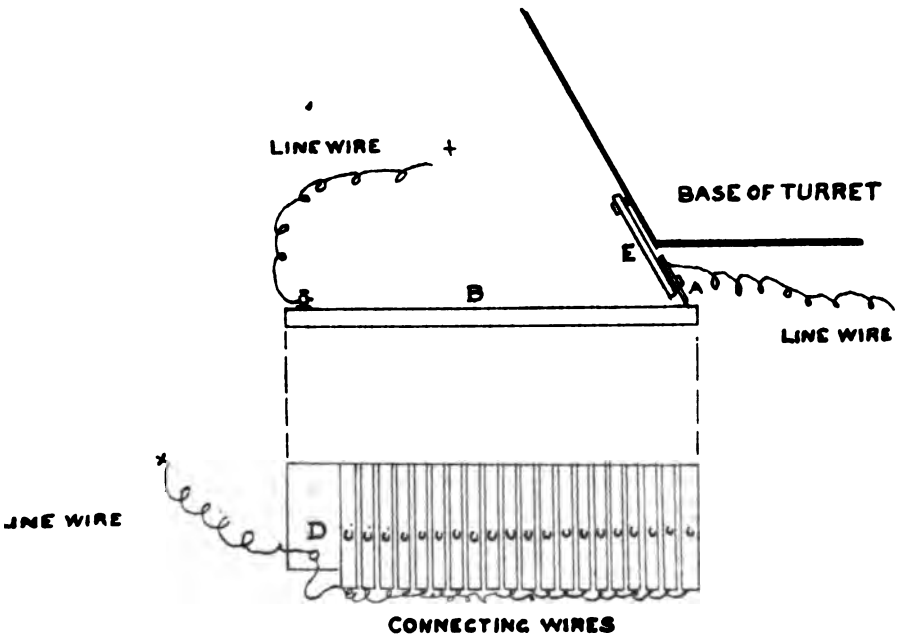
A.

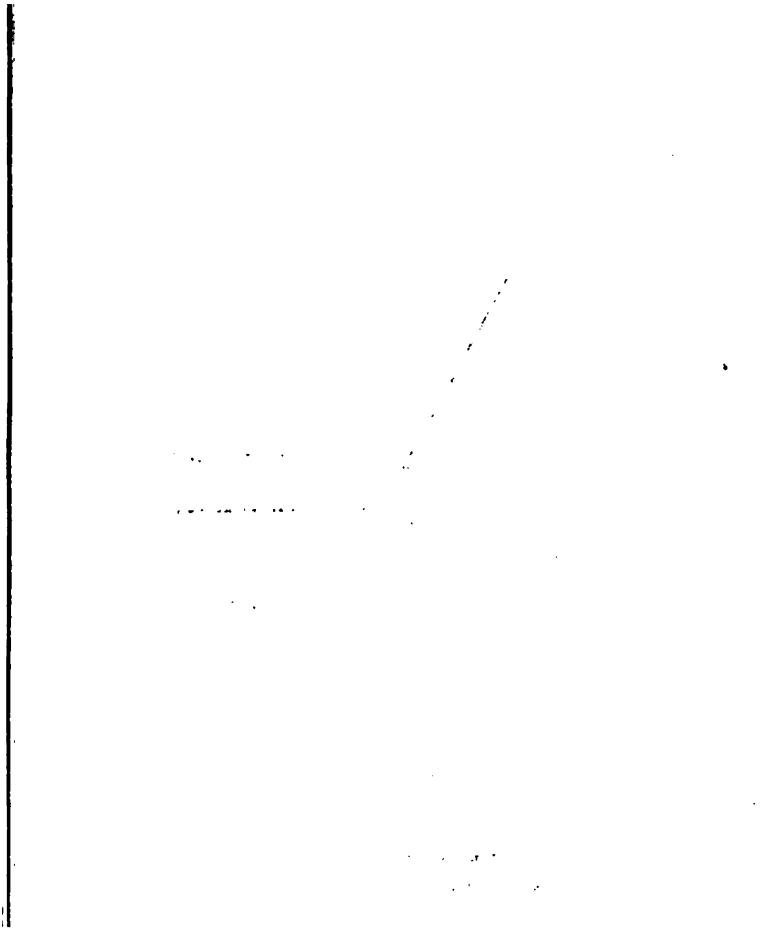
B.

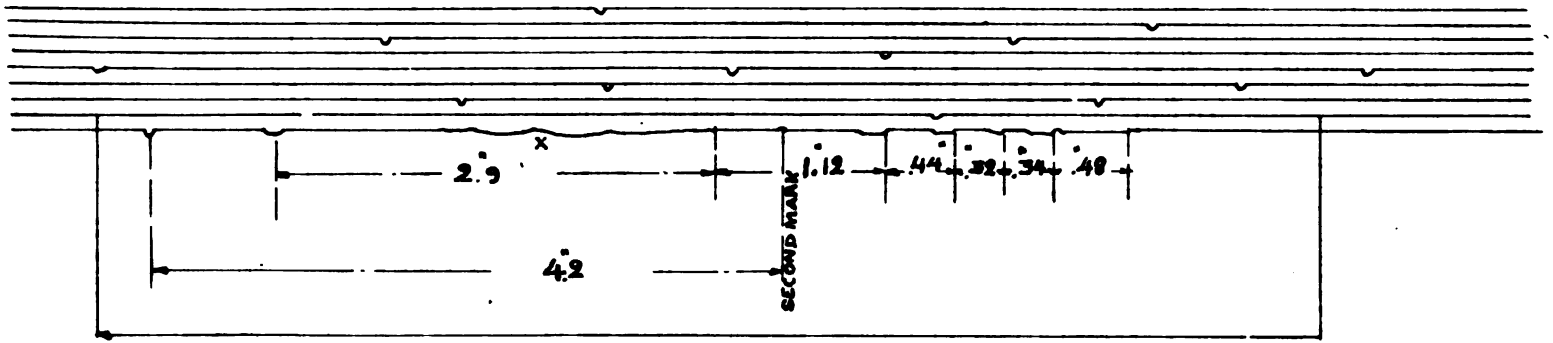


C.

A: COPPER PENCIL INSULATED FROM ARM E
B: HARDWOOD BOARD
C: COPPER STRIPS MORTISED INTO BOARD



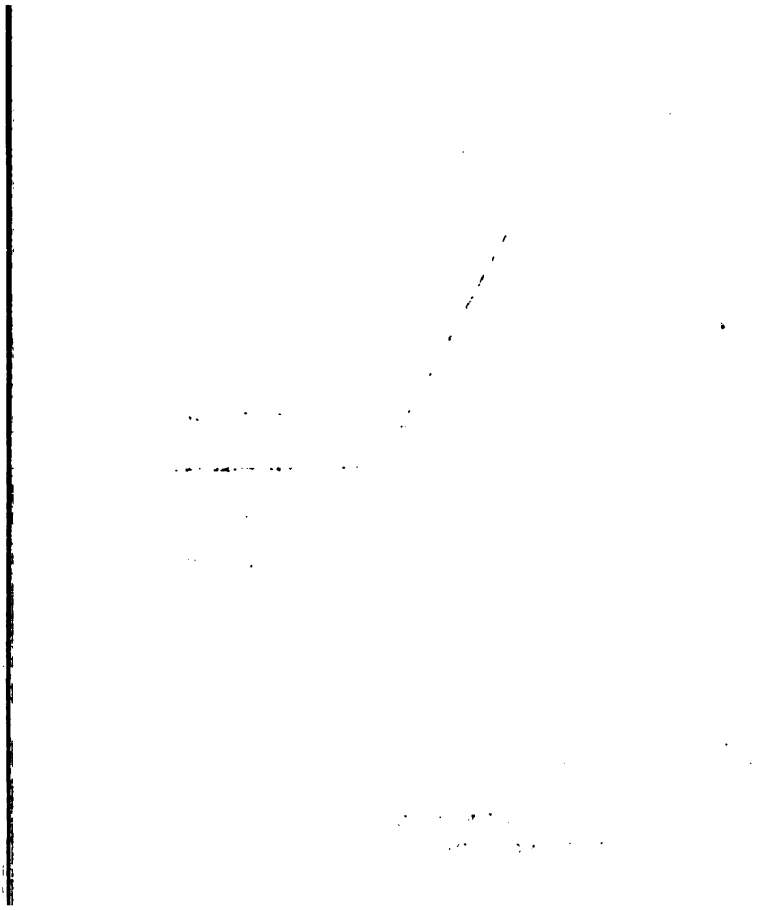


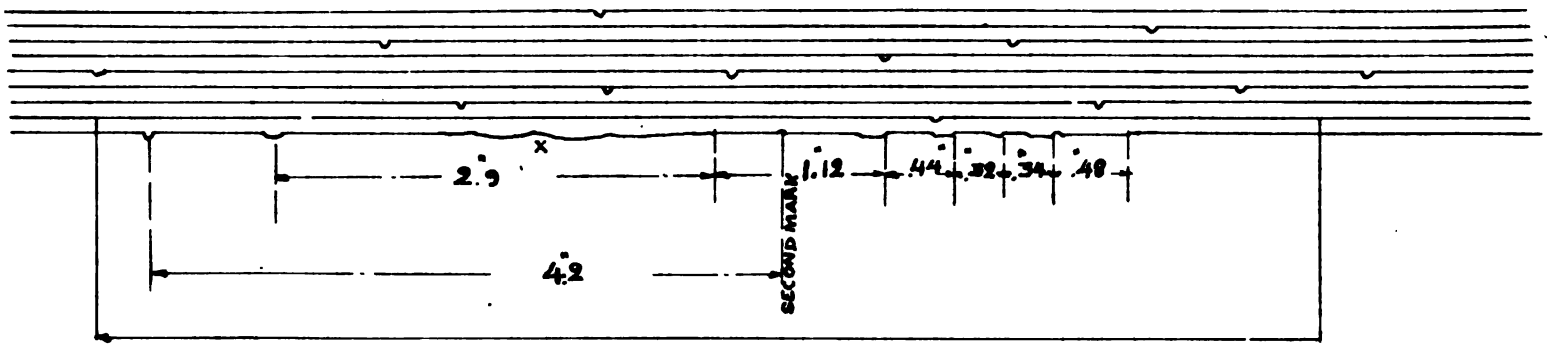


TOTAL TIME OF RECOIL 1⅓ SECOND

CHRONONOGRAPH RECORD OF THE VELOCITY OF RECOIL OF 13" EXPERIMENTAL TURRET

D.



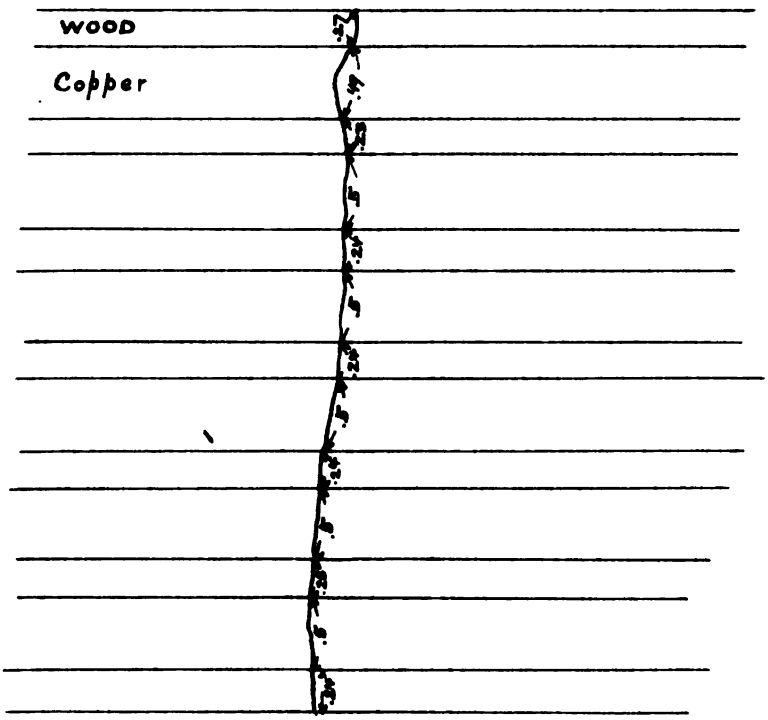


TOTAL TIME OF RECOIL 1⅓ SECOND

CHRONONOGRAPH RECORD OF THE VELOCITY OF RECOIL OF 13" EXPERIMENTAL TURRET

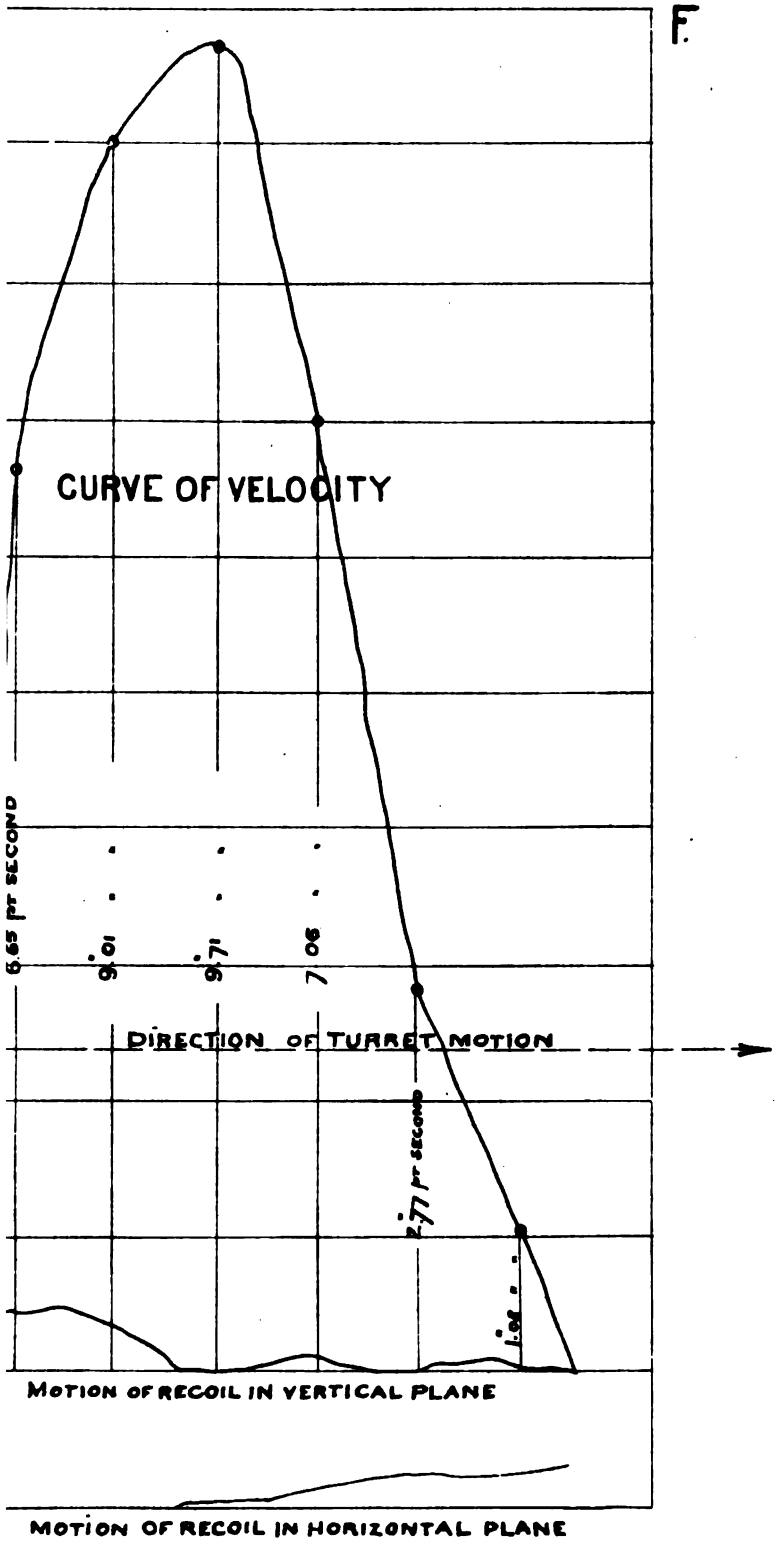
D.

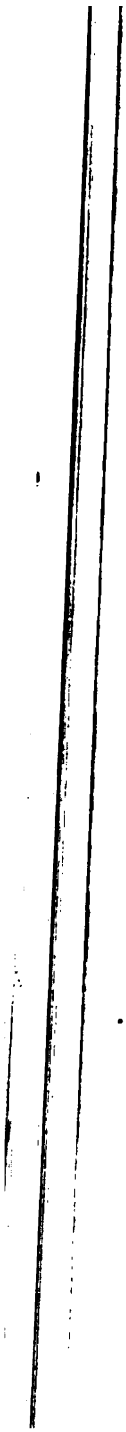
E



ARK MADE BY PENCIL OF VELOCITY INSTRUMENT
WHEN TURRET RECOILED

F.


CURVE OF VELOCITY
6.65 FT SECOND
9.01
9.71
7.06
DIRECTION OF TURRET MOTION
2.77 FT SECOND
1.04
MOTION OF RECOIL IN VERTICAL PLANE
MOTION OF RECOIL IN HORIZONTAL PLANE



EXPERIME

TW

PHOTO: THO WASHINGTON D.C.

REPORT

OF THE

F THE BUREAU OF CONSTRUCTION AND REPAIR.

NAVY DEPARTMENT,
BUREAU OF CONSTRUCTION AND REPAIR,
Washington, October 1, 1896.

obedience to the Department's instructions, I have the honor herewith a report of the work done under the cognizance of ıu during the fiscal year ending June 30, 1896, and also sub- ates for appropriations required for the fiscal year ending 898.

imate marked A is for the salaries of employees in the

imate marked B is for the general repair of vessels at navy- on foreign stations, purchase of stores, materials, machinery, kinds, preservation of machinery and stores, and for the proper ce of all work not otherwise provided for under the cognizance ıreau.

imates marked B special are for the completion of work ıthorized on the *Hartford* and *Chicago*, for the building of ;s for the naval stations at Port Royal, S. C., and Puget ash., and for the completion of the model tank at the navy- ıhington, D. C.

mates marked C are for the pay of such clerks and writers at l navy-yards as are indispensable for the proper and sys- osecution of the work.

mates marked D are for continuing the work on hulls and vessels in course of construction.

mate marked D special is to cover the cost of two composite ıssels of about 1,100 tons displacement, to be used as practice the United States Naval Academy.

IMATES, APPROPRIATION CONSTRUCTION AND REPAIR, 1897-98.

the appropriations required for the fiscal year ending June 30, 1898, by the Bureau of Construction and Repair, Navy Department.

jects of expenditures, and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1897.
A. *Salaries.*			
propriated)	$1,800.00		
(appropriated)	1,800.00		
draftsman (appropriated)	1,400.00		
class 3, at $1,600 each (appropriated)	3,200.00		
class 1, at $1,200 each (appropriated) *a*	2,400.00		
nessenger (appropriated)	720.00		
propriated)	660.00		
		$11,980.00	$13,380.00

of class 1 being in lieu of an assistant draftsman appropriated for, fiscal year 1897, at

clerk of class 2 appropriated for, fiscal year 1897, transferred to Bureau of Ordnance.

Estimates of the appropriations required for the fiscal year, etc.—Continued.

Detailed objects of expenditures, and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1897.
B. *Construction and repair of vessels.*			
For preservation and completion of vessels on the stocks and in ordinary; purchase of materials and stores of all kinds; steam steerers, pneumatic steerers, steam capstans, steam windlasses, and all other auxiliaries; labor in navy-yards and on foreign stations; purchase of machinery and tools for use in shops; carrying on work of experimental model tank; wear, tear, and repair of vessels afloat; general care, increase, and protection of the Navy in the line of construction and repair; incidental expenses, such as advertising, freight, foreign postage, telegrams, telephone service, photographing, books, professional magazines, plans, stationery, and instruments for drafting room (appropriated, act June 10, 1896)	$1,500,000.00	$1,500,000.00	$1,250,000.
Appropriated for construction and repair, 1896 and 1897, and made "immediately available"			350,000.
B. *Special.*			
For the completion of repairs to the U. S. S. *Hartford* (appropriated, acts July 26, 1894, and June 10, 1896)	70,000.00	70,000.00	100,000.
For the completion of repairs to the U. S. S. *Chicago* (appropriated, act June 10, 1896)	50,000.00	50,000.00	250,000.
For the construction of one steam tug for the use of the naval station, Port Royal, S. C. (submitted)	50,000.00	50,000.00	.....
For the construction of one steam tug for the use of the naval station, Puget Sound, Washington (submitted)	50,000.00	50,000.00	.....
For the completion of model tank, navy-yard, Washington, D. C., to be immediately available (appropriated, act June 10, 1896)	92,500.00	92,500.00	7,500.
C. *Civil establishment.*			
At navy-yard, Portsmouth, N. H.:			
One clerk to naval constructor (appropriated)	1,400.00		
Two writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Brooklyn, N. Y.:			
One clerk to naval constructor (appropriated)	1,400.00		
Three writers, at $1,017.25 each (appropriated)	3,051.75		
At navy-yard, Boston, Mass.:			
One clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, League Island, Pa.:			
One clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, Washington, D. C.:			
One clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, Norfolk, Va.:			
One clerk to naval constructor (appropriated)	1,400.00		
Two writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Pensacola, Fla.:			
One writer (appropriated)	1,017.25		
At navy-yard, Mare Island, Cal.:			
One clerk to naval constructor (appropriated)	1,400.00		
Two writers, at $1,017.25 each (appropriated)	2,034.50		
		19,972.50	19,972.
D. *Increase of the Navy—Construction and machinery.*			
On account of hulls and outfits of vessels and steam machinery of vessels heretofore authorized (See joint letter below.)	5,925,359.00	5,925,359.00	6,870,000.
D. *Special.*			
For two sheathed sailing vessels of about 1,100 tons displacement for the Naval Academy; estimated cost, including outfit, each (submitted)	250,000.00	500,000.00	.....

DEPARTMENT OF THE NAVY,
BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., September 4, 1896

SIR: In compliance with the request of the Bureau of Navigation, the Bureau l
the honor to submit herewith an estimate, in duplicate (Sheet D, special), for t
sheathed sailing vessels of about 1,100 tons displacement for the use of the Na
Academy as practice vessels for the naval cadets.

Very respectfully,

PHILIP HICHBORN,
Chief Constructor, U. S. N., Chief of Bureau

The SECRETARY OF THE NAVY.

DEPARTMENT OF THE NAVY,
BUREAU OF CONSTRUCTION AND REPAIR,
Washington, September 1, 1896.

We have the honor to submit herewith, in duplicate, joint estimates (inc
os. 1 and 2) of the amounts required by the Bureaus of Construction a
and Steam Engineering, under appropriation "Increase of the Navy, co
n and machinery," for work on new vessels authorized by Congress to Jun
, as per statements in detail herewith (inclosures Nos. 3 and 4), viz:

Sheet D.

Bureau of Construction and Repair:		
fiscal year 1896-97	$5,606,052	
fiscal year 1897-98	3,185,111	
otal		$8,791,163
Bureau of Steam Engineering:		
fiscal year 1896-97	3,368,898	
fiscal year 1897-98	2,052,800	
otal		5,421,698
ggregate		14,212,861
in Treasury available for above July 1, 1896		8,287,502
ppropriation required for fiscal year 1897-98		5,925,359

amount, $5,925,359, is the estimated amount required to be appropriated for
new vessels authorized by Congress for "Increase of the Navy, construction
chinery," for the fiscal year ending June 30, 1898.
ery respectfully,

PHILIP HICHBORN,
Chief Constructor, U. S. N., Chief of Bureau of Construction and Repair.
GEO. W. MELVILLE,
Engineer in Chief, U. S. N., Chief of Bureau of Steam Engineering.
ECRETARY OF THE NAVY.

ubmitting the above estimate for the appropriation required "Construction and repair," marked B in the above list, the desires to call attention to its full and complete statement on ject in its last annual report. The conditions set forth in that ill exist. The amount asked for is somewhat less than the total appropriated under this head at the last session of Congress, Bureau believes that with care and economy it will be sufficient eds during the coming fiscal year.

the past fiscal year the Bureau has felt more and more the lting from the inadequate amount of materials on hand at yards to do the current repair work. Materials for the con- and repair of ships, although classed under the general head ies," form but a small proportion of the articles included very comprehensive term, as will be evident from the fact lue of "supplies" acquired by the Navy during the three ending June 30, 1895, from open purchase and from con- unted, all told, to $15,032,571.86. During the same years materials used for the repairs of vessels was but $523,440.18. diture of materials for repairs includes both hull and Materials used in repairs to the hulls and machinery of about 3½ per cent of the supplies purchased, an made- of such materials may well exist while the supplies on parently amount to a very large sum. This is the condi- now existing, and it seriously hampers the work of the

ingle case: Under date of October 28, 1895, the Bureau each navy-yard, directing that requisitions for materials

be rigidly restricted to current needs, owing to the small balance remaining of the appropriation for construction and repair. It was impossible with this small balance to purchase any materials except for definite work ordered or authorized.

At the Mare Island Navy-Yard the *Petrel* went out of commission on May 20, 1896, and was surveyed about that time, the survey being forwarded from the yard June 9, 1896. It being evident that she would require new decks, the naval constructor, in advance of the survey, prepared and forwarded, May 15, 1896, requisitions for the decking required, there being no such materials on hand at the yard.

At the time these requisitions reached the Bureau work at the yards under the construction and repair appropriation was practically suspended owing to the small balance remaining, and it was impossible to approve any such requisitions without the danger of incurring a deficiency, which had been strictly forbidden by the Department. As it appeared, however, that the naval bill then under consideration by Congress would soon become a law, and as the bill carried a certain amount of money for construction and repair work which would become immediately available, the Bureau, in order to gain all the time possible, under date of May 28, 1896, approved the requisitions in order that the necessary steps preliminary to purchase might be taken in advance of the passage of the bill.

The naval bill became a law June 10, 1896; but even if contracts for this material had been awarded next day, it would have been at least four months before the work of laying the decks could have been begun upon the *Petrel*, since the material available on the Pacific Coast is unseasoned and would have required some seasoning before being laid. As the Department urgently required the services of the *Petrel*, it finally directed that material for her new decks be procured by open purchase, and kiln dried, so that it might be used at the earliest possible date. Kiln-dried material is very undesirable for outside work, such as decks. This material was delivered at the Mare Island Navy-Yard September 18, 1896, or more than three months after this urgent work could have been begun if the material had been in store. This is but one instance of many.

As additional evidence that the small supply of materials for repairs is really a source of expense to the Government, the Bureau invites attention to the appended tabular statement giving the number of requisitions approved by it from the three principal navy-yards for the fiscal years 1886 and 1896, classified according to amounts. It will be seen that during the fiscal year 1886 about 5½ per cent of the requisitions submitted were for amounts of material less than $10 in value, while for the fiscal year 1896 about 15½ per cent were for amounts under $10 in value.

1886.

	Value of materials covered by requisitions.							
	Under $10.	$10 to $50.	$50 to $100.	$100 to $500.	$500 to $1,000.	$1,000 to $5,000.	Above $5,000.	Total.
Number of requisitions:								
New York	4	34	30	73	11	11	.....	163
Norfolk	12	51	21	33	1	3	.....	121
Mare Island	6	24	20	44	4	7	.....	105
Total	22	109	71	150	16	21	.....	389
Percentage of grand total	5.66	28.02	18.25	38.56	4.11	5.40	.....	.....

1906.

	Value of materials covered by requisitions.							
	Under $10.	$10 to $50.	$50 to $100.	$100 to $500.	$500 to $1,000.	$1,000 to $5,000.	Above $5,000.	Total.
Number of requisitions:								
New York	103	209	99	149	36	34	6	656
Norfolk	63	103	56	93	20	15	2	352
Mare Island	46	88	46	105	30	36	9	360
Total	212	400	201	367	86	85	17	1,368
Percentage of grand total	15.50	29.24	14.69	26.83	6.29	6.21	1.24	

Precisely the contrary should be the case; that is, in view of the increase of work and the efforts that have been made by the Department to reduce the number of small requisitions and amount of material procured on open purchase, the small requisitions should have decreased in number, instead of increasing. The cause of the increase in small requisitions is simply that the stock of materials on hand for ship repair and issue to ships is so depleted that it is constantly necessary to purchase a few dollars' worth of this or that required for ordered work. Moreover, the appropriations for the Bureau have been so limited that it has been absolutely necessary to restrict purchase of materials to that needed for work ordered, and it has been impossible to accumulate a proper general stock; more especially as until a recent date all articles purchased for general stock out of the appropriation made for this Bureau, after being in store for a period of time never longer than one year, and possibly as short as one day, could be drawn upon for the work of other bureaus, without reimbursement of this Bureau's appropriation.

The recent orders issued by the Department will, to some extent, mitigate this state of affairs, but the Bureau considers that they should be extended. Moreover, if the policy of the Department to turn materials in store into a general pool after they have been in store but a very short period, unless they have been purchased for a specific purpose—that is, for work ordered—is to continue, the Bureau is of the opinion that all materials should be purchased from a common pool.

The naval supply fund has worked well for the limited materials for which it is used, but even with the increase made by the last Congress it is entirely too small. So long as vessels were being built at the principal working navy-yards, and a supply of materials on hand and reserved for their construction purchased out of the appropriation "Increase of the Navy," the Bureau was enabled, in an emergency, to utilize these materials for repair work, replacing them out of the construction and repair appropriation. In this way the increase of the Navy appropriation was practically available as a quasi supply fund for cases of emergency, and was repeatedly made use of to the great advantage of the Government. The work of shipbuilding having now practically ceased at navy-yards, the supplies purchased under "Increase of the Navy" are no longer on hand, and this is one reason why the small proportion of the amount of material on hand in general stock has been so much felt during the past fiscal year.

After mature consideration, the Bureau has concluded that the true remedy for the present state of affairs lies in the direction of an increase of the naval supply fund, and accordingly it is recommended that Congress be asked to increase the naval supply fund by at least $1,500,000, and that it be made available for obtaining all materials for supplying

stores to ships in commission and for the current work at navy-yards, the total fund being suitably apportioned between the various bureaus.

This would not necessitate an appropriation, since the naval supply fund is always reimbursed for the value of stores obtained by it as they are used by the several working bureaus.

The Department has for years endeavored to do away with the evils resulting from the purchase of material by driblets upon numerous small requisitions. Such a course adds enormously to the clerical work in connection with obtaining supplies and largely increases the cost of the material itself. Large dealers simply will not compete for a few dollars' worth of goods to be supplied under the rigid and roundabout methods which seem unavoidable in the disbursement of public money, and there is always the tendency for the supply of small lots of materials obtained by open purchase to fall into the hands of brokers or middlemen. The Bureau believes that the extension of the naval supply fund idea along the lines recommended above will permanently remove this danger.

With such a fund the heads of working departments and the general storekeeper at a navy-yard, acting conjointly, could prepare a list of the maximum stock of materials to be kept on hand at that yard at any time. This stock list having been approved by the bureaus concerned, could be readily kept up by the general storekeeper through the Bureau of Supplies and Accounts, being revised from time to time by the heads of departments concerned. With an adequate stock, purchase could be made in large quantities at regular intervals—semiannually or quarterly, as found best—and requisitions need be prepared by heads of departments only for special articles required for work in hand and not kept in the general stock. Such a course would result in a direct saving to the Government in clerical work, and a much larger indirect saving in the cost of materials, to say nothing of the gain in promptness in executing work.

Before leaving this subject, the Bureau wishes to repeat and emphasize the statement that although the "supplies" on hand may amount to a large sum, the amount of material in store at the yards suitable and available for use in the work of the Bureau is far below what it should be.

The plans for the alteration of the *Chicago* have been approved and the work is now progressing. The total appropriation originally requested for this work was $300,000. At the last session of Congress the sum of $250,000 was appropriated, and the remainder is asked for in the estimates submitted above, as it will be needed by July 1, 1897.

The amount necessary to complete the repairs on the *Hartford* is also asked for in continuation of the appropriation for the current fiscal year. The amount in the present estimate will complete the work which is now well advanced. When again commissioned, the *Hartford* will have been practically rebuilt; she has been modernized as much as practicable and will be capable of rendering efficient service for a number of years, so that apart from the sentimental value of the preservation of Farragut's famous flagship, she will give a fair return for the money expended upon her.

DUTIES OF THE BUREAU.

By Regulation Circular No. 16 of August 19, 1895, the Department made slight modifications in the duties of the Bureau, defining and limiting them more accurately in certain respects. The results have been satisfactory, as a larger volume of business has been handled than

before, with a minimum of friction or controversy with other
ıus. Owing to the fact that differences between bureaus quickly
ı the Department, and usually the press, they are liable to have
e prominence given them, the fact being overlooked that the vast
rity of questions that arise—many of them vexatious and compli-
l—are settled promptly and amicably by agreement between the
ıus concerned.

this connection, the Bureau would like to call attention to the fact,
ıplified by its title of Construction and Repair, that it has to do only
designing, building, and repairing. Its work leaves its hands and
ndled on board ship by officers of other corps. These seldom have
al interest in the success of the work, and are generally disposed
critical. While as a result the Bureau is sometimes embarrassed
ıgh unnecessary and unwarranted carping and fault-finding, real
ıts are quickly discovered. Whoever discovers them has no esprit
ırps or personal interest to induce him to gloss them over or mini-
their importance, but rather the contrary. As a result, the
ırtment quickly hears of them and the Bureau has an opportunity
ırrect them. While thus the Department is apt to hear much
than it otherwise would of the defects and shortcomings of this
ıau, the result in general is beneficial to the Bureau itself and to
ıervice at large. It is impossible to carry on such work as that
by the Bureau, involving not only large considerations and com-
ted questions, but also a vast amount of petty detail, without
s and mistakes. For the reason pointed out above, however,
s and mistakes must be soon discovered, corrected for the case in
, and avoided in the future.

is Bureau is the only working bureau situated as above; and it is
ctfully submitted for the consideration of the Department that in
rearrangement or reassignment of duties or organization endeavor
ld be made to secure a state of affairs where the man who works
ompleted machine, ship, gun, or engine should be a fearless and
ased critic of the man who designed and built it. This is the only
ın way of rapidly discovering and remedying such defects as may
ı in, and whose prompt correction in time of peace is essential to
our vessels at all times in readiness to successfully withstand the
e additional strains incident to service in time of war.

VESSELS COMPLETED.

ıring the last fiscal year the following vessels were completed and
ally accepted by the Government:

me of vessel.	Where and by whom built.	Date of acceptance.
a.....	Wm. Cramp & Sons, Philadelphia, Pa.....	May 15, 1896
ıhusetts.....	....do.....	May 29, 1896
.....	Union Iron Works, San Francisco, Cal.....	June 26, 1896
lin.....	Bath Iron Works, Bath, Me.....	June 8, 1896
ın.....	Iowa Iron Works, Dubuque, Iowa.....	June 16, 1896

e dates of acceptance for the *Indiana* and *Katahdin* are those of
acceptance. The *Massachusetts*, *Oregon*, and *Ericsson* have been
isionally accepted, subject to the usual final trial after a certain
in service, and, pending final acceptance, the Government retains
all balance on their account.

The following vessels, built or completed at navy-yards, were commissioned for the first time during the last fiscal year:

Name of vessel.	Where commissioned.	Date commissioned.
Maine	Navy-yard, New York	Sept. 17, 1895
Texas	Navy-yard, Norfolk	Aug. 15, 1895
Terror	Navy-yard, New York	Apr. 15, 1896
Monadnock	Navy-yard, Mare Island	Feb. 20, 1896

The double-turreted monitors *Terror* and *Monadnock* were partially built under contract, and completed by the Government. The completion of the *Terror* was much delayed because of the delay in the installation of her pneumatic system for operating guns, turrets, steering gear, etc., which was put in under contract. The *Terror* is now making trials of her pneumatic appliances.

TRIAL TRIPS.

The following vessels have had their contractors' trials during the past fiscal year:

Name of vessel.	Type.	Date of trial.	Speed required by contract.	Speed obtained on trial.	Horse-power developed on trial.	By whom built.
			Knots.	*Knots.*		
Indiana	First-class battle ship.	Oct. 18, 1895	15	15.55	9,738	Wm. Cramp & Sons.
Massachusetts	do	Apr. 25, 1896	15	16.21	10,403	Do
Oregon	do	May 14, 1896	15	16.79	11,111	Union Iron Works.
Katahdin	Ram	Oct. 31, 1896	17	16.11	5,068	Bath Iron Works.
Ericsson	Torpedo boat	Mar. 4, 1896	24	(a)		Iowa Iron Works.

a Dock trial.

The *Katahdin* having failed to maintain a speed of 17 knots for two hours, as required by the contract, was not accepted by the Department until her acceptance had been authorized by a special act of Congress.

CONTRACTS AWARDED.

Under the provisions of the act making appropriations for the naval service for the fiscal year ending June 30, 1896, proposals were opened at the Department October 1, 1895, for 6 light-draft composite gunboats, to cost not more than $230,000 each, and not more than two of which could be built in any one yard or by one contracting party. The following firms submitted bids: Union Iron Works, San Francisco, Cal.; Bath Iron Works, Bath, Me.; Lewis Nixon, Elizabethport, N. J.; J. H. Dialogue & Son, Camden, N. J.; Detroit Dry Dock Company, Detroit, Mich.

Although the bid of the Detroit Dry Dock Company was the lowest it could not be considered by the Department owing to the provisions of the treaty of 1817 with Great Britain relating to war ships on the Great Lakes.

The contracts for these gunboats were awarded as follows:

Vessel.	Contractor.	Amount of bid.
Annapolis	Lewis Nixon	$227,000
Vicksburg	Bath Iron Works	229,400
Newport	do	229,400
Princeton	J. H. Dialogue & Son	230,000
Wheeling	Union Iron Works	219,000
Marietta	do	223,000

Gunboats *Annapolis* and *Marietta* are to be fitted with Babcock & Wilcox water-tube boilers. Gunboats *Annapolis*, *Vicksburg*, *Newport*, and *Princeton* will be single-screw ships with full sail power, while gunboats *Wheeling* and *Marietta* will be twin-screw ships with steadying sails only. Both classes are almost identical in displacement, power, speed, and armament, but the twin-screw ships carry 20 tons more coal at their normal draft.

BATTLE SHIPS KEARSARGE AND KENTUCKY.

On November 30, 1895, bids were opened at the Department for the construction of two sea-going coast-line battle ships, authorized by the act making appropriations for the naval service for the fiscal year ending June 30, 1896, to cost, exclusive of armament, not more than $4,000,000 each. The proposals received were as follows:

William Cramp & Sons:	
Class 1. For one ship	$2,820,000
Class 1. For two ships, each	2,750,000
Class 2 A. For one ship with all armor and gun protection	2,500,000
Class 2 A. For two ships with all armor and gun protection, each	2,450,000
Class 2 B. For three ships with hull armor	8,000,000
Class 2 C. For one ship with all armor and gun protection	3,850,000
Union Iron Works:	
Class 1. For one ship	2,740,000
Class 1. For two ships, each	2,690,000
Class 2. For one ship	2,650,000
Class 2. For two ships, each	2,640,000
Newport News Shipbuilding and Dry Dock Company:	
Class 1. For one ship	2,350,000
Class 1. For two ships, each	2,250,000

Bids under class 1 were for ships in accordance with Department's plans and specifications.

Bids under class 2 were for ships in accordance with plans and specifications furnished by the bidder.

The act authorizing the construction of these vessels required one of them "to be built on or near the coast of the Pacific Ocean, or in the waters connected therewith, provided, that if it shall appear from the bids received that the said vessel can not be built at a fair cost at the place fixed therefor in the proposal the same may be built elsewhere in the United States." The bids received from the Pacific Coast were so much in excess of that of the lowest responsible bidder that the Department decided them to be beyond the limit of a "fair cost," and the contract for both vessels were awarded December 26, 1895, to the Newport News Shipbuilding and Dry Dock Company, at their bid of $2,250,000 for each vessel. The contracts were duly signed January 2, 1896, and they are required to be completed January 2, 1899.

STEAM TUG NO. 5, FOR LEAGUE ISLAND NAVY-YARD.

In the act making appropriations for the naval service for the fiscal year ending June 30, 1897, an item of $8,000 was provided for the completion of steam tug No. 5, for League Island Navy-Yard, to be immediately available. This vessel was authorized in the act making appropriations for the naval service for the fiscal year ending June 30, 1896. Plans and specifications were prepared in the Bureau, and June 26, 1895, orders were sent for the work to be commenced at the Norfolk Navy-Yard. The boat is now in frame and will probably be completed about December 31, 1896. The general dimensions of the boat were given in my last annual report.

VESSELS UNDER CONSTRUCTION.

In general, good progress has been made upon vessels under construction during the year.

The armor-making plants have nearly completed their old contracts, and with their present facilities it is believed that there will be no further delays on account of slow delivery of armor. It is hoped that the delays in supplying ordnance material, which have also been great in the past, will disappear in the future.

There was unfortunate delay in the work of completing the *Puritan*, owing to differences between the heads of departments concerned as to certain methods and results in connection with the installation of the battery, but that question having been disposed of by the Department, the work is now proceeding satisfactorily.

The tabular statement below gives the condition of all vessels under construction July 1, 1896:

Name of vessel.	Where and by whom building.	Estimates of superintending constructors.	
		Percentage of completion.	Probable date of completion.
Brooklyn	Wm. Cramp & Sons, Philadelphia, Pa	87	October, 1896.
Iowa	do	66	May, 1897.
Kearsarge	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	2	January, 1899.
Kentucky	do	2	Do.
Nashville	do	83	March 1, 1897.
Wilmington	do	83	Do.
Helena	do	83	Do.
Puritan	United States navy-yard, New York	96	November 1, 1896.
Annapolis	Lewis Nixon, Elizabethport, N. J	10	March 15, 1897.
Vicksburg	Bath Iron Works, Bath, Me	45	February 15, 1897.
Newport	do	43	Do.
Princeton	John H. Dialogue & Son, Camden, N. J	13	June 15, 1897.
Wheeling	Union Iron Works, San Francisco, Cal	20	February 26, 1897.
Marietta	do	20	Do.
Torpedo boat No. 3	Columbian Iron Works, Baltimore, Md	48	February 1, 1897.
Torpedo boat No. 4	do	44	February 15, 1897.
Torpedo boat No. 5	do	42	March 1, 1897.
Torpedo boat No. 6	Herreshoff Manufacturing Co., Bristol, R.I.		
Torpedo boat No. 7	do		
Torpedo boat No. 8	Moran Bros., Seattle, Wash	12	June 20, 1897.
Submarine torpedo boat	Columbian Iron Works, Baltimore, Md	32	
Steam tug No. 5	United States navy-yard, Norfolk, Va	20	December 31, 1896.

The matter of expense and delay resulting from changes in plans of vessels under construction has been referred to more than once by the Secretary of the Navy in his reports. In his report of November 18, 1893, he stated his intention of reducing to a minimum such changes,

and in a subsequent report for 1894 referred again to the subject in connection with his explanation of the order which had been recently issued by him prescribing the routine to be followed in such matters.

The Department, however, has from the first recognized the fact that the changes are, in most cases, improvements, rendered advisable by the progress made between the time when the ship was designed and completed. The Bureau has always endeavored to reduce the number of changes; and it is a source of gratification to it to be able to state that during the last fiscal year the total cost of all changes authorized by the Department, or Bureau in matters under its cognizance, upon the vessels now under construction given in the above list amounted to but forty-five one-hundredths of 1 per cent of the contract price of the vessels. About half of this cost was due to the adoption of the process of fire-proofing wood, the value of which was pointed out in the Department's report for 1895, so that the cost of miscellaneous changes was but one-fourth of 1 per cent of the contract price of the vessels.

VESSELS SURVEYED AND REPAIRED.

The following-named vessels have been surveyed and repairs have been ordered on the same during the fiscal year 1895–96:

Name of vessel.	Where surveyed.	Date of survey.	Estimated cost.
Chicago	Navy-yard, New York	June 25, 1895	$372, 200. 00
Miantonomoh	Navy-yard, League Island, Pa	July 9, 1895	16, 916. 00
Philadelphia	Navy-yard, Mare Island, Cal	July 30, 1895	1, 545. 00
Adams	....do	Aug. 1, 1895	164. 00
Columbia	Navy-yard, New York	Aug. 17, 1895	3, 662. 00
Mohican	Navy-yard, Mare Island, Cal	Oct. 1, 1895	38, 739. 00
Fern	Navy-yard, Portsmouth, N. H	Oct. 7, 1895	4, 783. 20
Montgomery	Navy-yard, Norfolk, Va	Oct. 17, 1895	9, 319. 00
Raleigh	....do	Nov. 5, 1895	10, 340. 00
Atlanta	Navy-yard, New York	Nov. 26, 1895	33, 037. 50
Vesuvius	Navy-yard, League Island, Pa	Jan. 4, 1896	6, 501. 00
Monongahela	Navy-yard, Norfolk, Va	Jan. 6, 1896	5, 942. 00
Texas	....do	Jan. 14, 1896	39, 450. 00
Do	....do	Jan. 30, 1896	38, 551. 00
Ranger	Navy-yard, Mare Island, Cal	Feb. 15, 1896	76, 131. 00
Bennington	....do	Mar. 21, 1896	16, 553. 00
Vermont	Navy-yard, New York	Apr. 27, 1896	2, 400. 00
Petrel	Navy-yard, Mare Island, Cal	June 8, 1896	50, 705. 00
New York	Tompkinsville, N. Y	June 9, 1896	14, 090. 00
Concord	Navy-yard, Mare Island, Cal	June 10, 1896	69, 619. 00
Wahneta	Navy-yard, Norfolk, Va	June 25, 1896	4, 963. 00

NEW CONSTRUCTION.

The act making appropriations for the naval service for the fiscal year ending June 30, 1897, approved June 10, 1896, authorized the construction of 3 sea-going coast-line battleships, 3 torpedo boats to make a speed of 30 knots per hour, and not more than 10 additional torpedo boats at a total cost of $500,000.

Some time prior to the passage of this act, the Department, under date of March 25, 1896, convened a special board for the purpose of considering the question of the main battery and its disposition upon any new battle ships to be authorized. This board made its report May 18, 1896, which was approved by the Department June 22, 1896, and the same day the Bureau was directed to proceed with the designs of new vessels.

The authorizing act included the novel provision that all the new vessels must be under contract within one hundred and twenty days

from the passage of the act. Circulars defining the chief characteristics of the battle ships and torpedo boats were prepared and issued to the shipbuilders of the country, that for the battle ships June 22, 1896, and that for the torpedo boats June 17, 1896. The work was pushed as much as practicable by the Bureau, and under date of August 28 the first set of plans and specifications were sent to prospective bidders, being but fifty-eight working days after the Department directed the designs to be prepared. This is an unprecedentedly short time for the preparation of such plans as regards our Navy, and the Bureau takes pleasure in stating its belief that the possibility of accomplishing such work has been largely brought about through the working of the Department's General Order No. 433, referred to in the Department's report for 1894, by which responsibility for designs of new ships was placed upon this Bureau, and a practical method laid down for the combination of the work of this Bureau with that of others.

The Bureau did not undertake the preparation of designs for the 30-knot torpedo boats, believing that this speed, unprecedented in the United States, will be best secured by leaving as free a hand as possible to prospective bidders.

As regards the torpedo boats (not to exceed 10) for which a total expenditure of $500,000 was authorized, the Department concluded to invite bids for boats of about 20 knots speed and 65 tons displacement, and also for somewhat larger boats to make not less than 22½ knots and of about 105 tons displacement, resembling closely the *Cushing*. Bids for the 22½-knot boats were invited under Class 2, that is, upon bidder's plans alone, although the Bureau furnished bidders who wished to prepare their designs full plans of a very similar boat. For the 20-knot boats bids were invited under Classes 1 and 2, and complete plans and specifications were prepared by the Bureau, the first being sent out to bidders August 3, 1896.

SUBMARINE TORPEDO BOATS.

The act making appropriations for the naval service for the fiscal year ending June 30, 1897, approved June 10, 1896, authorized, in addition to the battleships and torpedo boats, the construction of two submarine torpedo boats of the Holland type, at a cost not exceeding $175,000 each, provided that the Holland boat now being built should be accepted by the Department as fulfilling all the requirements of the contract and as being satisfactory to the Secretary of the Navy. The act further provided that no action regarding the additional Holland boats should be taken until the boat now under construction should have been fully tested to the satisfaction of the Secretary of the Navy and accepted.

The Holland submarine torpedo boat is now being constructed by the John P. Holland Torpedo Boat Company, who have placed their work with the Columbian Iron Works, of Baltimore, Md., as subcontractors. The condition of the work upon the boat now being built is such that some time must elapse before the tests of the same can be completed, and pending such tests the Bureau reserves its recommendations.

TUGBOAT FOR PORT ROYAL AND PUGET SOUND.

The dry docks at Port Royal and Puget Sound having been completed and tested, it becomes absolutely necessary for their efficiency that a tugboat should be provided for each station. A large ship can not be safely docked without the aid of a tugboat, and at present every

ip that goes to either of the above stations must be accompanied by tugboat either detailed from another station or hired at the nearest mmercial port. Moreover, all communication with the above stations by water, and there appears no likelihood that rail communication ill be had with them for many years, if ever—a fact which emphasizes ill more the necessity for a tugboat. The Bureau earnestly recomends that provision be made this year for the building of a tugboat t each station. Estimated amount required for this purpose, $50,000 or each.

REPAIR SHOPS AT PORT ROYAL AND PUGET SOUND.

The Bureau earnestly renews its recommendation of last year that 75,000 be appropriated for each of the above stations, in order to roperly equip them with tools and appliances for making emergency epairs. The prime object of dry docks at these stations is to provide laces at convenient points on our seacoast where our ships can be uickly repaired and again made ready for service if damaged in ction. Lacking the tools, nothing can be done at either of these locks but cleaning and painting. The act making appropriations for he fiscal year ending June 30, 1896, appropriated $60,000 for a construction and repair workshop at Port Royal, and a similar act for the iscal year ending June 30, 1897, appropriated $60,000 for a construcion and repair shop at Puget Sound. It is urged that Congress this ear make the necessary appropriation to equip these shops so that here may be no delay in putting these stations into serviceable condition.

SHEATHING THE BOTTOMS OF CRUISING VESSELS.

In its reports for the fiscal year ending June 30, 1889, and for the iscal year ending June 30, 1891, the Bureau has discussed fully the ubject of sheathing the bottoms of steel ships, asserting its conviction of the great economy to be obtained by adopting the system for future constructions intended for foreign cruising. Longer experience has nly tended to confirm this conviction, and the fact seems incontestable hat the cost of fitting sheathing to any of our cruising ships would be nore than saved during a single three years' cruise by the decrease in oal and docking bills, without considering at all the question of the bility of the ships to maintain the speed for which they were designed. The prejudice—for it can be called by no other name—against the ractice of sheathing has been very strong in our Navy, and of all our ew ships none have been built with sheathed bottoms. The first leparture from the established practice has been the composite construction of the six new gunboats now building.

These vessels will unquestionably be of far greater value and be nuch less expensive to maintain from the fact of their bottoms being oppered. Steel vessels are expected to be docked for cleaning twice a year, but they can not maintain their speed, or, for the same low cruising speed, their economy of coal consumption, for a single month after eaving the dock. Reports from our cruising ships show an average ncreased consumption of coal of about 25 per cent for maintaining rdinary cruising speeds, even with ships not more than six months out of dock. This fact, added to the cost of docking—which is excessive n foreign stations—should be sufficient of itself to change our practice.

It may be remarked that at the time of the Bureau's 1889 report ecommending sheathing this practice was not very largely followed broad. Since that date, however, the practice has been very much

extended, especially in the case of recent English vessels. Had we adopted sheathing seven years ago we would have led foreign practice; adopting it now we can but follow, yet this fact does not lessen the value of the practice itself.

The methods of sheathing have been much simplified and cheapened by experience; for whereas formerly it was considered essential to fit two courses of plank, with the best modern practice there is but one thickness fitted at much less cost. The Bureau hopes that in the light of experience it will not meet with such opposition on this question in the future as in the past, and that future cruising vessels for our Navy will have their bottoms sheathed.

ARMOR BOLTS.

Upon the recommendation of this Bureau and the Bureau of Ordnance, the Department appointed, April 6, 1895, a board consisting of Naval Constructors A. W. Stahl and W. L. Capps and Prof. P. R. Alger, to consider and report upon the details of the best method of fitting armor and backing to naval vessels and the appliances which may be required in the execution of the work in the most efficient, economical, and expeditious manner. A similar board was convened at the time we first undertook the fitting of armor, and in view of the small experience had in this country at such work and the large experience abroad, this board followed a conservative course, recommending bolts very similar to those used in the best foreign practice.

As a result of experience with its armored ships, the Bureau became convinced that much improvement could be made, and it was able to furnish the second board, referred to above, with a mass of valuable information upon the subject. The board, under date of January 23, 1896, made its report, which will be found in a later part of this report; it covers the ground most thoroughly, and was approved by the Department. The principal change recommended was in the size and proportions of the bolts used in securing side armor. The type of bolt recommended was used in the test of the target representing the side of the U. S. S. *Iowa* and was found most satisfactory. The Bureau considers the armor bolts now adopted for our vessels the simplest, cheapest, and best extant.

CARE AND PRESERVATION OF TORPEDO BOATS.

Owing to the increasing number of our torpedo boats, it becomes imperative that some means should be taken in the near future to provide for their proper care and preservation—a duty with which this Bureau is charged under the law and the regulations of the Navy Department. Torpedo boats should not be left in the water when not in service. They should be hauled out in such a location and with such appliances that they can be launched again ready for service at very short notice. I recommend that Congress be asked at its next session to provide for the care and preservation of our torpedo boats at the yards and stations determined upon by the Department. The Bureau has prepared in advance, alternative plans of different types of apparatus for this purpose, and it considers that the navy-yard at Boston has special advantages as the site for locating one of the stations. The amount estimated as necessary for beginning this work is $100,000.

AUXILIARY CRUISERS.

During the past winter the Bureau prepared plans for converting several classes of ships, which are entered in the naval reserve list,

including the *Owego* class and *Hudson* class of lake vessels, and the *El Sol* class and *El Dorado* class of ocean-going vessels, into effective auxiliary cruisers. Such plans should be prepared and kept on file in a special department for ready reference, covering all vessels available for use as auxiliary cruisers, so that in case of emergency orders could be given to take the vessels in hand and convert them with no unnecessary delay. At present, however, such work can be done only when there are no designs of new vessels in hand and, as opportunity offers, to spare the services of draftsmen for the purpose. As far as possible, such articles of outfit as are not perishable and material for conversion of each of these vessels should be prepared and kept in store ready for immediate use.

NAVAL MILITIA.

The Bureau has taken great interest in the Naval Militia. This organization of recent formation is rapidly growing in public interest, and if properly nurtured and encouraged bids fair to become an important adjunct to our national system of defense. The act making appropriations for the naval service for the fiscal year ending June 30, 1897, appropriated $50,000, or double the amount allowed in any previous year, toward providing equipment and outfit for the organization in the different States. The Bureau will continue to aid by all means in its power.

During the past year vessels and boats have been fitted out and loaned to the Naval Militia as follows:

VESSELS.

Name of vessel.	State to which lent.	Date of order authorizing transfer.
Ajax	New Jersey	September 26, 1895.
Passaic	Georgia	June 30, 1896.
Comanche	California	February 10, 1896.

BOATS.

State to which transferred.	Number and type of boats.	Date of order authorizing transfer.
Connecticut	One steam cutter	April, 1896.
California	....do	March, 1896.
Do	One launch	October 26, 1895.
Do	Three cutters	Do.
Do	Three whaleboats	Do.

DRY DOCKS.

The constant and increasing necessity for dry docks forces itself upon the attention of the Department with every new ship put into commission. With the policy hitherto pursued of building steel ships without sheathing, this demand is much greater than it might otherwise have been. During the past year the new dry docks at Port Royal and Puget Sound have been completed and tested, and the new dock in the New York Navy-Yard is at last approaching completion. The Portsmouth Navy-Yard has practically no docking facilities at all. The stone dock at the Boston Navy-Yard is available for the smaller class of vessels only. The New York Navy-Yard will soon have in service three dry docks, which will be barely sufficient for its present needs.

It frequently happens that one or more docks at a station are occupied for extended periods by vessels needing extensive repairs to the bottom, just as the dock at Norfolk has been recently by the *Texas*, and then ships that need only cleaning and painting must wait. The Bureau has heretofore recommended the construction of additional docks, and takes occasion to renew this recommendation.

EXPERIMENTAL TANK.

The act making appropriations for the naval service for the fiscal year ending June 30, 1897, contained an appropriation of $7,500 toward the construction of an experimental model tank at the Washington Navy-Yard, under the Bureau of Construction and Repair, the value of which has been repeatedly set forth by the Bureau in its annual reports. Preparation of plans for this establishment are well advanced. After careful examination by boring and driving test piles, a satisfactory site has been selected at the navy-yard, and preliminary work on the ground is now progressing. It is hoped that the next Congress will appropriate the balance necessary to complete this important installation. As soon as the money becomes available work can be expedited.

It is but proper to state that the Bureau is in receipt of several communications from private shipbuilders throughout the country upon this subject, expressing gratification at the prospect that the United States was at last in a fair way to be on a par with foreign nations in this important respect.

CARPENTERS IN THE NAVY.

The Bureau desires again to call the attention of the Department to the need for more carpenters. These officers have far greater and more important duties to perform on our modern steel vessels than they had on the wooden ships. Being practically the only representatives of the Bureau of Construction on board the ship, the maintenance of the integrity of the hull structure and the complicated pipes and valves composing the drainage and ventilating systems devolves upon them. In addition, their services have been found very useful as assistants to the inspectors of contract work. There are now only 39 carpenters on the active list, and 8 will retire from age alone during the next two years. There are at present 46 ships in commission, most of which should have a carpenter, and there is useful duty at shore stations for 20 more. The last edition of the Navy Register shows only one of the carpenters on the active list to be not on duty, either afloat or ashore, though they should, like other officers, be entitled to leave of absence after returning from a cruise.

BOATS.

During the last year a number of boats have been built in accordance with the new standard plans which the Department directed the Bureau to prepare under date of April 20, 1894. It has given the Bureau much pleasure to find that, in general, officers who have used these boats speak well of them and consider them superior to the boats formerly in use. While the Bureau desires to adhere to these plans for the present, until a number of these boats are in service, it proposes from time to time to introduce such additional modifications and improvements as experience may show to be desirable. It is not thought,

however, that any material change will soon become necessary, or any departure from models which will interfere with interchangeability of boats from ship to ship.

BUSINESS METHODS.

The changes in methods of conducting correspondence, directed by Departmental Order No. 8, have been in use now for a year, with satisfactory results. The Bureau adopted January 1, 1896, a new method of keeping its files, which is substantially the card-index method, and it has worked satisfactorily to date. By connecting all letters on a given subject with a single number, the numbers of separate files have been very much reduced. Thus, July 1, 1895, the current file number of the Bureau was 8340; July 1, 1896, the current file numbers were 1914 and 911A, a total of 2825, although without question the business has slightly increased.

The new system of determining and recording cost of work at navy-yards, and reporting the same to the Department, went into effect April 1, 1896. This system has given great satisfaction, so far as regards the work of this Bureau.

IMPROVEMENT IN NAVY-YARD PLANTS.

The reports of naval constructors stationed at the several navy-yards, herewith included, make recommendations in detail regarding the additions and improvements which they deem necessary at their respective stations to put the plant in a thoroughly efficient condition to undertake any work that may be required of it in the most economical manner. While the Bureau concurs in these recommendations, it is not deemed expedient at the present time to ask for an appropriation to cover all the improvements proposed.

LIST OF VESSELS IN THE UNITED STATES NAVY.

The following tables give the dimensions and other particulars of all vessels belonging to the United States Navy, built and building or authorized, together with their present condition or station:

Table of vessels of

ARMORED STEEL

Name.	Type.	Rig.	By whom and where built or building.	Condition or service.
Indiana	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	North Atlantic station.
Iowa	Steel seagoing coast-line battle ship. 2 12″ barbette turrets. 4 8″ barbette turrets.	.....do	Wm. Cramp & Sons, Philadelphia, Pa.	Building.....
Maine	Steel armored battle ship. Two 10″ barbette turrets.	Two military masts.	U. S. navy-yard, Brooklyn, N. Y.	North Atlantic station.
Massachusetts	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	North Atlantic station.
Oregon	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	.....do	Union Iron Works, San Francisco, Cal.	Pacific Station..
Texas	Steel armored battle ship. Two 12″ turrets.	Two military masts.	U. S. navy-yard, Norfolk, Va.	North Atlantic station.
Kearsarge	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 2 8″ turrets superposed.	.....do	Newport News S. B. & D. D. Co., Newport News, Va.	Building.....
Kentucky	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 2 8″ turrets superposed.	.....do	Newport News S. B. & D. D. Co., Newport News, Va.	.....do .....
Illinois	Steel seagoing coast-line battle ship. Two 13″ barbette turrets.	.....do	Newport News S. B. & D. D. Co., Newport News. Va.	.....do .....
Alabama	.....do	.....do	Wm. Cramp & Sons, Philadelphia, Pa.	.....do .....
Wisconsin	.....do	.....do	Union Iron Works, San Francisco, Cal.	.....do .....

ARMORED

Brooklyn	Steel armored cruiser. Four 8″ barbette turrets.	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Building.....
New York	Steel armored cruiser. Two 8″ barbette turrets.	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship, North Atlantic station.

ARMORED

Katahdin	Steel harbor defense ram.	None	Bath Iron Works, Bath, Me.	North Atlantic station.

the United States Navy.

VESSELS—BATTLE SHIPS.

Ship fully equipped ready for sea, all stores on board. Normal coal supply.				Type of engine.	Speed in knots per hour.	Maximum indicated horsepower.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
Length on load water line	Extreme breadth.	Mean draft.	Displacement.							
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*				*Tons*	*Tons.*	*Tons.*	*Ft. In.*
348 0	69 3	24 0	10,288	Twin screw vertical triple expansion.	15.547	9,738	43	400	1,640	27 1⅛
360 0	72 2⅛	24 0	11,410	.....do.....	†16	†11,000	45.95	625	1,780	26 9⅛
318 0	57 0	21 6	6,682	.....do.....	*17.45	*9,293	32.32	400	896	22 6
348 0	69 3	24 0	10,288	.....do.....	16.21	10,403	43	400	1,640	27 1⅛
348 0	69 3	24 0	10,288	.....do.....	16.79	11,111	43	400	1,640	27 1⅛
301 4	64 1	22 6	6,315	.....do.....	†17	†8,000	30.22	500	850	23 8
368 0	72 5	23 6	11,525	.....do.....	†16	†10,000	47.25	410	1,210	25 1
368 0	72 5	23 6	11,525	.....do.....	†16	†10,000	47.25	410	1,210	25 1
368 0	72 5	23 6	‡11,525	.....do.....	†16	†10,000	47.25	800	1,200	25 0
368 0	72 5	23 6	‡11,525	.....do.....	†16	†10,000	47.25	800	1,200	25 0
368 0	72 5	23 6	‡11,525	.....do.....	†16	†10.000	47.25	800	1,200	25 0
CRUISERS.										
400 6	64 8½	24 0	9,271	Twin screw vertical triple expansion.	21.91	18,769	41.19	900	1,753	26 2
380 6½	64 10	23 10	8,200	.....do.....	21	17,401	39.50	750	1,290	26 8
RAM.										
250 9	43 5	15 0	2,155	Twin screw vertical triple expansion.	16.11	5,068	19.16	175	192.70	16 0

* On mean draft of 18 feet 11 inches displacement of 5,660 tons. † Estimated.
‡ With two-thirds of full coal supply, two-thirds of ammunition, and two-thirds of stores.

Table of vessels of the United

ARMORED STEEL

Name.	Batteries.			Armor.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Sides.	Turrets.	Barbettes.	Slopes.	Flat.
				Inches.	*Inches.*	*Inches.*	*Inches.*	*Inch.*
Indiana	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Iowa	4 12″ B. L. R. 8 8″ B. L. R. 6 4″ R.F.guns.	20 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	4	14	15 5	15 8 and 6	.....	2½
Maine	4 10″ B. L. R. 6 6″ B. L. R.	7 6-pdr. R. F. 8 1-pdr. R. F. 4 Gatlings	4	12	8	12 10	.....	2
Massachusetts	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Oregon	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Texas	2 12″ B. L. R. 6 6″ B. L. R.	12 6-pdr. R. F. 6 1-pdr. R. F. 4 37-mm H. R. C. 2 Gatlings	4	12	12	.....	.....	2
Kearsarge	4 13″ B. L. R. 4 8″ B. L. R. 14 5″ R.F.guns.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15 11 9	15 12	For'd 3″ Aft 5″	2½
Kentucky	4 13″ B. L. R. 4 8″ B. L. R. 14 5″ R.F.guns.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15 11 9	15 12	For'd 3″ Aft 5″	2½
Illinois	4 13″ B. L. R. 14 6″ R. F.	16 6-pdr. R. F. 4 1-pdr. R. F. 1 Gatling 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15	15 10	For'd 3″ Aft 4″	2½
Alabama	4 13″ B. L. R. 14 6″ R. F.	16 6-pdr. R. F. 4 1-pdr. R. F. 1 Gatling 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15	15 10	For'd 3″ Aft 4″	2½
Wisconsin	4 13″ B. L. R. 14 6″ R. F.	16 6-pdr. R. F. 4 1-pdr. R. F. 1 Gatling 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15	15 10	For'd 3″ Aft 4″	2½
								ARMORED
Brooklyn	8 8″ B. L. R. 12 5″ R.F.guns.	12 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	5	3	5½	8 and 4	6	3
New York	6 8″ B. L. R. 12 4″ R.F.guns.	8 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	3	4	5½	10	6	3
								ARMORED
Katahdin	.....	4 6-pdr. R. F.	.....	6 3	.....	.....	6	2

States Navy—Continued.

VESSELS—BATTLE SHIPS.

Complement.		Cost of hull and machinery.	Date of act authorizing building or completion.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
32	441	*$3,020,000	June 30, 1890	Nov. 19, 1890	May 7, 1891	Nov. 19, 1893	Nov. 20, 1895
36	450	*3,010,000	July 19, 1892	Feb. 11, 1893	Aug. 5, 1893	Feb. 11, 1896	.....
31	313	†2,500,000	Aug. 3, 1886	.....	Oct. 17, 1888	.....	Sept. 17, 1895
32	441	*3,020,000	June 30, 1890	Nov. 18, 1890	June 25, 1891	Nov. 18, 1893	June 10, 1896
32	441	*3,180,000	June 30, 1890	Nov. 19, 1890	Nov. 19, 1891	Nov. 19, 1893	July 15, 1896
30	362	†2,500,000	Aug. 3, 1886	.....	June 1, 1889	.....	Aug. 15, 1895
40	480	*2,250,000	Mar. 2, 1895	Jan. 2, 1896	June 30, 1896	Jan. 2, 1899	.....
40	480	*2,250,000	Mar. 2, 1895	Jan. 2, 1896	June 30, 1896	Jan. 2, 1899	.....
40	480	*2,595,000	June 10, 1896	Oct. 5, 1896	.....	Oct. 5, 1899	.....
40	480	*2,650,000	June 10, 1896	Oct. 2, 1896	.....	Oct. 2, 1899	.....
40	480	*2,674,950	June 10, 1896	Sept. 25, 1896	.....	Sept. 25, 1899	.....

CRUISERS.

46	515	*$2,986,000	July 19, 1892	Feb. 11, 1893	Aug. 2, 1893	Feb. 11, 1896	Dec. 1, 1896
40	526	*2,985,000	Sept. 7, 1888	Aug. 28, 1890	Sept. 30, 1890	Jan. 1, 1893	Aug. 1, 1893

RAM.

Table of vessels of the United

ARMORED VESSELS—DOUBLE

Name.	Type.	Rig.	By whom and where built or building.	Condition of service.
Amphitrite	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	One military mast.	Harlan & Hollingsworth, Wilmington, Del.	North Atlantic station.
Miantonomoh	Iron low freeboard coast-defense monitor. Two compound armor turrets.	.....do	John Roach, Chester, Pa.	In ordinary, League Island, Pa.
Monadnock	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	.....do	Continental Iron Works, Vallejo, Cal.	Pacific station.
Monterey	Steel low freeboard monitor. Two steel barbette turrets.	.....do	Union Iron Works, San Francisco, Cal.	.....do .....
Puritan	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	.....do	John Roach, Chester, Pa.	Completing at navy-yard, New York.
Terror	Iron low freeboard coast-defense monitor. Two steel turrets.	.....do	Wm. Cramp & Sons, Philadelphia, Pa.	Undergoing trials, navy-yard, New York.

Name.	Batteries.			Armor.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Sides.	Turrets.	Barbettes.	Slopes.	Flat.
				Inches.	*Inches.*	*Inches.*	*Inches.*	*Inch.*
Amphitrite	4 10″ B. L. R. 2 4″ R. F. guns	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 1-pdr. R. F. G.	.....	9 5	7½	11½	.....	1½
Miantonomoh	4 10″ B. L. R.	2 6-pdr. R. F. G. 2 3-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	7	11½	.....	.....	1½
Monadnock	4 10″ B. L. R. 2 4″ R. F. guns	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 1-pdr. R. F. G.	.....	9 5	7½	11½	.....	1½
Monterey	2 12″ B. L. R. 2 10″ B. L. R.	6 6-pdr. R. F 4 1-pdr. R. F 2 Gatlings	.....	13 8 6	For'd 8″ Aft 7½″.	For'd 13″ Aft 11½″.	.....	3
Puritan	4 12″ B. L. R. 6 4″ R. F. guns	6 6-pdr. R. F 2 37mm H. R. C. 4 Gatlings	.....	14 10 6	8	14	.....	2
Terror	4 10″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 Gatlings	.....	7	11½	.....	.....	1½

States Navy—Continued.

TURRETED MONITORS.

Ship fully equipped ready for sea, all stores on board. Normal coal supply.				Type of engine.	Speed in knots per hour.	Maximum indicated horsepower.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
Length on load water line.	Extreme breadth.	Mean draft.	Displacement.							
Ft. In.	*Ft. In.*	*Ft. In.*	*Ft. In.*				*Tons.*	*Tons.*	*Tons.*	*Ft. In.*
259 6	55 10	14 6	3,990	Twin screw inclined compound.	10.5	1,600	27.67	250	250	14 7½
259 6	55 10	14 6	3,990	.....do.....	10.5	1,426	27.67	250	260	15 0
259 6	55 10	14 6	3,990	Twin screw horizontal triple expansion.	12	3,000	27.67	250	250	14 7½
256 0	59 0	14 10	4,084	Twin screw vertical triple expansion.	13.6	5,244	26.74	200	236	15 4
289 6	60 1½	18 0	6,060	Twin screw horizontal compound.	12.4	3,700	33.64	400	410	18 3
259 6	55 10	14 6	3,990	Twin screw inclined compound.	10.5	1,600	27.67	250	250	14 7½

Complement.		Cost of hull and machinery.	Date of act authorizing building or completion.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Apr. 23, 1895
13	136	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Oct. 27, 1891
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1875	.....	Feb. 20, 1896
19	172	†$1,628,950	Mar. 3, 1887	June 14, 1889	July, 1889	June 14, 1892	Feb. 13, 1893
22	186	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1875	.....	Dec. 10, 1896
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Apr. 15, 1896

*Appropriation to complete Amphitrite, Miantonomoh, Monadnock, Puritan, and Terror, $3,178,046.
†Contract price.

Table of vessels of the United

ARMORED VESSELS—SINGLE

Name.	Type.	Keel laid.	By whom and where built.	Condition.	Dimensions.			Displacement.	Indicated horse-power.
					Length between perpendiculars.	Breadth.	Mean draft.		
					Feet.	*Ft. In.*	*Ft. In.*	*Tons.*	
Ajax	Low free-board single-turret monitor.	1862	Snowdon & Mason, Pittsburg, Pa.	Camden, N. J., for use of naval militia.	225	43 8	13 6	2,100	340
Comanche	do	1862	Donahue, Ryan & Secor, Jersey City, N. J.	San Francisco, Cal., for use of naval militia.	200	46 0	11 6	1,875	340
Canonicus	do	1862	Harrison Loring, Boston, Mass.	In ordinary, League Island, Pa.	225	43 8	13 6	2,100	340
Catskill	do	1862	John Ericsson, Brooklyn, N. Y.	do	200	46 0	11 6	1,875	340
Jason	do	1862	John Ericsson, Chester, Pa.	do	200	46 0	11 6	1,875	340
Lehigh	do	1862	do	do	200	46 0	11 6	1,875	340
Mahopac	do	1862	Z. & F. Secor, Jersey City, N.J.	do	225	43 8	13 6	2,100	340
Manhattan	do	1862	Perine, Secor & Co., Jersey City, N.J.	do	225	43 8	13 6	2,100	340
Montauk	do	1862	John Ericsson, Brooklyn, N. Y.	do	200	46 0	11 6	1,875	340
Nahant	do	1862	Harrison Loring, Boston, Mass.	do	200	46 0	11 6	1,875	340
Nantucket	do	1862	Atlantic Works, Boston, Mass.	Southport, N. C., for use of naval militia.	200	46 0	11 6	1,875	340
Passaic	do	1862	John Ericsson, Brooklyn, N. Y.	Brunswick, Ga., for use of naval militia.	200	46 0	11 6	1,875	340
Wyandotte	do	1862	Miles Greenwood, Cincinnati, Ohio.	For use of naval militia, Connecticut.	225	43 8	13 6	2,100	340

States Navy—Continued.

TURRET MONITORS (IRON).

Type of engine.	Speed, in knots.	Batteries.		Armor.		Cost of hull and machinery.	Date of act authorizing building.
		Main.	Secondary.	Sides.	Turret.		
				In.	*In.*		
Single-screw grasshopper.	5 to 6	2 XV" S. B....	None	5	10	$626,582.24	Apr. 17, 1862
.....do	5 to 6	None	.....do	5	11	613,164.98	Do.
.....do	6	2 XV" S. B....	2 12-pdr. H.	5	10	622,963.22	Do.
.....do	6	.....do	None	5	11	427,766.78	Do.
.....do	5 to 6	.....do	.....do	5	11	422,766.73	Do.
.....do	5 to 6	.....do	.....do	5	11	422,726.28	Do.
.....do	6	.....do	.....do	5	10	635,374.55	Do.
.....do	6	.....do	.....do	5	10	628,879.27	Do.
.....do	5 to 6	.....do	.....do	5	11	423,027.49	Do.
.....do	5 to 6	.....do	.....do	5	11	413,515.14	Do.
.....do	5 to 6	.....do	.....do	5	11	408,691.37	Do.
.....do	5 to 6	.....do	.....	5	11	423,171.69	Do.
.....do	6	.....do	.....	5	10	633,327.84	Do.

Table of vessels of the United

UNARMORED

Name.	Type.	Rig.	By whom and where built or building.	Condition or service.
Atlanta*	Protected cruiser	Brig	John Roach & Sons, Chester, Pa.	Repairing at navy-yard, N. Y.
Baltimore	do	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Repairing at Mare Island, Cal.
Boston	do	Brig	John Roach & Sons, Chester, Pa.	Asiatic Station.
Charleston	do	Two military masts.	Union Iron Works, San Francisco, Cal.	Repairing at Mare Island, Cal.
Chicago*	do	Bark	John Roach & Sons, Chester, Pa.	Repairing at New York Navy-Yard.*
Cincinnati	do	Two-masted schooner.	U. S. navy-yard, Brooklyn, N. Y.	North Atlantic Station.
Columbia	do	do	Wm. Cramp & Sons, Philadelphia, Pa.	do
Detroit	Cruiser	do	Columbian Iron Works, Baltimore, Md.	Asiatic Station.
Marblehead	do	do	City Point Works, Boston, Mass.	European Station.
Montgomery	do	do	Columbian Iron Works, Baltimore, Md.	North Atlantic Station.
Minneapolis	Protected cruiser	do	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship European Station.
Newark	do	Bark	Wm. Cramp & Sons, Philadelphia, Pa.	North Atlantic Station
Olympia	do	Two-masted schooner.	Union Iron Works, San Francisco, Cal.	Flagship Asiatic Station.
Philadelphia	do	do	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship Pacific Station.
Raleigh	do	do	U. S. navy-yard, Norfolk, Va.	North Atlantic Station.
San Francisco	do	Three-masted schooner.	Union Iron Works, San Francisco, Cal.	European Station.

*To have new machinery, modern battery, and different rig.

ites Navy—Continued.

EEL VESSELS.

Ship fully equipped ready for sea, all stores on board. Normal coal supply.				Type of engine.	Speed in knots per hour.	Maximum indicated horse power.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft at lowest point of keel. Ship ready for sea, bunkers full.
Mean draft at water line.	Extreme breadth.	Mean draft.	Displacement.							
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*					*Tons.*	*Tons.*	*Ft. In.*
71 3	42 1½	16 10	3,000	Single screw horizontal compound.	15.60	4,030	20.03	.....	490	21 0½
27 6	48 7½	19 6	4,413	Twin screw horizontal triple expansion.	20.096	10,064	25.89	400	1,143.87	23 11½
71 3	42 1½	16 10	3,000	Single screw horizontal compound.	15.60	4,030	20.03	.....	495.80	21 0½
12 7	46 2	18 7	3,730	Twin screw horizontal compound.	18.20	6,666	23	328	757.70	21 8½
25 0	48 2	19 0	4,500	Twin screw compound, overhead beam.	15.10	5,064	26.92	.....	831.94	22 6½
00 0	42 0	18 0	3,213	Twin screw vertical triple expansion.	†19	†10,000	20.04	350	460.09	20 2½
12 0	58 2½	22 6½	7,375	Triple screw vertical triple expansion.	22.8	18,509	36 87	750	1,670	25 7
57 0	37 0	14 7	2,089	Twin screw vertical triple expansion.	18.71	5,227	15.75	200	340	16 8
57 0	37 0	14 7	2,089	.....do.....	18.44	5,451	15.75	200	340	16 8
57 0	37 0	14 7	2,089	.....do.....	19.05	5,580	15.75	200	340	16 8
12 0	58 2½	22 6½	7,375	Triple screw vertical triple expansion.	23.073	20,862	36.87	750	1,670	25 7
10 0	49 2	18 9	4,098	Twin screw horizontal triple expansion.	19	8,869	25	400	809.46	22 7½
40 0	53 0½	21 6	5,870	Twin screw vertical triple expansion.	21.686	17,313	29.36	400	1,169.66	24 9½
27 6	48 7½	19 2½	4,324	Twin screw horizontal triple expansion.	19.678	8,815	25.89	400	1,085.6	23 5
00 0	42 0	18 0	3,213	Twin screw vertical triple expansion.	†19	†10,000	20.04	350	460.09	20 2½
10 0	49 2	18 9	4,098	Twin screw horizontal triple expansion.	19.525	9,913	25	350	627.76	22 3½

† Estimated.

Table of vessels of

ARMORED STEEL

Name.	Type.	Rig.	By whom and where built or building.	Condition or service.
Indiana	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	North Atlantic station.
Iowa	Steel seagoing coast-line battle ship. 2 12″ barbette turrets. 4 8″ barbette turrets.	.....do	Wm. Cramp & Sons, Philadelphia, Pa.	Building.....
Maine	Steel armored battle ship. Two 10″ barbette turrets.	Two military masts.	U. S. navy-yard, Brooklyn, N. Y.	North Atlantic station.
Massachusetts	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	North Atlantic station.
Oregon	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	.....do	Union Iron Works, San Francisco, Cal.	Pacific Station..
Texas	Steel armored battle ship. Two 12″ turrets.	Two military masts.	U. S. navy-yard, Norfolk, Va.	North Atlantic station.
Kearsarge	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 2 8″ turrets superposed.	.....do	Newport News S. B. & D. D. Co., Newport News, Va.	Building.....
Kentucky	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 2 8″ turrets superposed.	.....do	Newport News S. B. & D. D. Co., Newport News, Va.	.....do .....
Illinois	Steel seagoing coast-line battle ship. Two 13″ barbette turrets.	.....do	Newport News S. B. & D. D. Co., Newport News, Va.	.....do .....
Alabama	.....do	.....do	Wm. Cramp & Sons, Philadelphia, Pa.	.....do .....
Wisconsin	.....do	.....do	Union Iron Works, San Francisco, Cal.	.....do .....

ARMORED

Brooklyn	Steel armored cruiser. Four 8″ barbette turrets.	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Building.....
New York	Steel armored cruiser. Two 8″ barbette turrets.	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship, North Atlantic station.

ARMORED

Katahdin	Steel harbor defense ram.	None	Bath Iron Works, Bath, Me.	North Atlantic station.

l States Navy.

—BATTLE SHIPS.

y equipped ready all stores on board. l coal supply. Extreme breadth.	Mean draft.	Displacement.	Type of engine.	Speed in knots per hour.	Maximum indicated horse-power.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
In.	*Ft. In.*	*Tons.*				*Tons*	*Tons.*	*Tons.*	*Ft. In.*
3	24 0	10,288	Twin screw vertical triple expansion.	15.547	9,738	43	400	1,640	27 1½
2½	24 0	11,410	.....do.....	†16	†11,000	45.95	625	1,780	26 9½
0	21 6	6,682	.....do.....	*17.45	*9,293	32.32	400	896	22 6
3	24 0	10,288	.....do.....	16.21	10,403	43	400	1,640	27 1½
3	24 0	10,288	.....do.....	16.79	11,111	43	400	1,640	27 1½
1	22 6	6,315	.....do.....	†17	†8,000	30.22	500	850	23 8
5	23 6	11,525	.....do.....	†16	†10,000	47.25	410	1,210	25 1
5	23 6	11,525	.....do.....	†16	†10,000	47.25	410	1,210	25 1
5	23 6	‡11,525	.....do.....	†16	†10,000	47.25	800	1,200	25 0
5	23 6	‡11,525	.....do.....	†16	†10,000	47.25	800	1,200	25 0
5	23 6	‡11,525	.....do.....	†16	†10,000	47.25	800	1,200	25 0

:S.

8½	24 0	9,271	Twin screw vertical triple expansion.	21.91	18,769	41.19	900	1,753	26 2
10	23 10	8,200	.....do.....	21	17,401	39.50	750	1,290	26 8

5	15 0	2,155	Twin screw vertical triple expansion.	16.11	5,068	19.16	175	192.70	16 0

n mean draft of 18 feet 11 inches displacement of 5,660 tons. † Estimated.
'ith two-thirds of full coal supply, two-thirds of ammunition, and two-thirds of stores.

Table of vessels of the United

ARMORED STEEL

Name.	Batteries.			Armor.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Sides.	Turrets.	Barbettes.	Slopes.	Flat.
				Inches.	*Inches.*	*Inches.*	*Inches.*	*Inch.*
Indiana	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Iowa	4 12″ B. L. R. 8 8″ B. L. R. 6 4″ R.F.guns.	20 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	4	14	15 5	15 8 and 6	.....	2½
Maine	4 10″ B. L. R. 6 6″ B. L. R.	7 6-pdr. R. F. 8 1-pdr. R. F. 4 Gatlings	4	12	8	12 10	.....	2
Massachusetts	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Oregon	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Texas	2 12″ B. L. R. 6 6″ B. L. R.	12 6-pdr. R. F. 6 1-pdr. R. F. 4 37mm H. R. C. 2 Gatlings	4	12	12	.....	.....	2
Kearsarge	4 13″ B. L. R. 4 8″ B. L. R. 14 5″ R.F.guns.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15 11 9	15 12	For'd 3″ Aft 5″	2½
Kentucky	4 13″ B. L. R. 4 8″ B. L. R. 14 5″ R.F.guns.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15 11 9	15 12	For'd 3″ Aft 5″	2½
Illinois	4 13″ B. L. R. 14 6″ R. F.	16 6-pdr. R. F. 4 1-pdr. R. F. 1 Gatling 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15	15 10	For'd 3″ Aft 4″	2½
Alabama	4 13″ B. L. R. 14 6″ R. F.	16 6-pdr. R. F. 4 1-pdr. R. F. 1 Gatling 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15	15 10	For'd 3″ Aft 4″	2½
Wisconsin	4 13″ B. L. R. 14 6″ R. F.	16 6-pdr. R. F. 4 1-pdr. R. F. 1 Gatling 1 field gun	4	Top 16½. Bottom 9½. Water line 13½.	17 15	15 10	For'd 3″ Aft 4″	2½
								ARMORED
Brooklyn	8 8″ B. L. R. 12 5″ R.F.guns.	12 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	5	3	5½	8 and 4	6	3
New York	6 8″ B. L. R. 12 4″ R.F.guns.	8 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	3	4	5½	10	6	3
								ARMORED
Katahdin	.....	4 6-pdr. R. F.	.....	6 3	.....	.....	6	2

ites Navy—Continued.

SSELS—BATTLE SHIPS.

Complement.		Cost of hull and machinery.	Date of act authorizing building or completion.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
32	441	*$3,020,000	June 30, 1890	Nov. 19, 1890	May 7, 1891	Nov. 19, 1893	Nov. 20, 1895
36	450	*3,010,000	July 19, 1892	Feb. 11, 1893	Aug. 5, 1893	Feb. 11, 1896	.....
31	313	†2,500,000	Aug. 3, 1886	.....	Oct. 17, 1888	.....	Sept. 17, 1895
32	441	*3,020,000	June 30, 1890	Nov. 18, 1890	June 25, 1891	Nov. 18, 1893	June 10, 1896
32	441	*3,180,000	June 30, 1890	Nov. 19, 1890	Nov. 19, 1891	Nov. 19, 1893	July 15, 1896
30	362	†2,500,000	Aug. 3, 1886	.....	June 1, 1889	.....	Aug. 15, 1895
40	480	*2,250,000	Mar. 2, 1895	Jan. 2, 1896	June 30, 1896	Jan. 2, 1899	.....
40	480	*2,250,000	Mar. 2, 1895	Jan. 2, 1896	June 30, 1896	Jan. 2, 1899	.....
40	480	*2,595,000	June 10, 1896	Oct. 5, 1896	.....	Oct. 5, 1899	.....
40	480	*2,650,000	June 10, 1896	Oct. 2, 1896	.....	Oct. 2, 1899	.....
40	480	*2,674,950	June 10, 1896	Sept. 25, 1896	.....	Sept. 25, 1899	.....
U ISERS.							
46	515	*$2,986,000	July 19, 1892	Feb. 11, 1893	Aug. 2, 1893	Feb. 11, 1896	Dec. 1, 1896
40	526	*2,985,000	Sept. 7, 1888	Aug. 28, 1890	Sept. 30, 1890	Jan. 1, 1893	Aug. 1, 1893
M.							
7	90	*$930,000	Mar. 2, 1889	Jan. 28, 1891	July 1891	Jan. 28, 1892	Feb. 20, 1896

* Contract price. † Limit of cost.

Table of vessels of the United

ARMORED VESSELS—DOUBLE

Name.	Type.	Rig.	By whom and where built or building.	Condition of service.
Amphitrite	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	One military mast.	Harlan & Hollingsworth, Wilmington, Del.	North Atlantic station.
Miantonomoh	Iron low freeboard coast-defense monitor. Two compound armor turrets.	.....do	John Roach, Chester, Pa.	In ordinary, League Island, Pa.
Monadnock	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	.....do	Continental Iron Works, Vallejo, Cal.	Pacific station.
Monterey	Steel low freeboard monitor. Two steel barbette turrets.	.....do	Union Iron Works, San Francisco, Cal.	.....do .....
Puritan	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	.....do	John Roach, Chester, Pa.	Completing at navy-yard, New York.
Terror	Iron low freeboard coast-defense monitor. Two steel turrets.	.....do	Wm. Cramp & Sons, Philadelphia, Pa.	Undergoing trials, navy-yard, New York.

Name.	Batteries.			Armor.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Sides.	Turrets.	Barbettes.	Slopes.	Flat.
				Inches.	*Inches.*	*Inches.*	*Inches.*	*Inch.*
Amphitrite	4 10″ B. L. R. 2 4″ R.F. guns	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 1-pdr. R. F. G.	.....	9 5	7½	11½	.....	1½
Miantonomoh	4 10″ B. L. R.	2 6-pdr. R. F. G. 2 3-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	7	11½	.....	.....	1½
Monadnock	4 10″ B. L. R. 2 4″ R.F. guns	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 1-pdr. R. F. G.	.....	9 5	7½	11½	.....	1½
Monterey	2 12″ B. L. R. 2 10″ B. L. R.	6 6-pdr. R. F 4 1-pdr. R. F 2 Gatlings	.....	13 8 6	For'd 8″ Aft 7½″.	For'd 13″ Aft 11½″.	.....	3
Puritan	4 12″ B. L. R. 6 4″ R.F. guns	6 6-pdr. R. F 2 37mm H. R. C. 4 Gatlings	.....	14 10 6	8	14	.....	2
Terror	4 10″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 Gatlings	.....	7	11½	.....	.....	1½

tes Navy—Continued.

RRETED MONITORS.

ip fully equipped ready for sea, all stores on board. Normal coal supply.				Type of engine.	Speed in knots per hour.	Maximum indicated horse-power.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
water line.	Extreme breadth.	Mean draft.	Displacement.							
In.	*Ft. In.*	*Ft. In.*	*Ft. In.*				*Tons.*	*Tons.*	*Tons.*	*Ft. In.*
9 6	55 10	14 6	3,990	Twin screw inclined compound.	10.5	1,600	27.67	250	250	14 7½
9 6	55 10	14 6	3,990	.....do.....	10.5	1,426	27.67	250	260	15 0
9 6	55 10	14 6	3,990	Twin screw horizontal triple expansion.	12	3,000	27.67	250	250	14 7½
6 0	59 0	14 10	4,084	Twin screw vertical triple expansion.	13.6	5,244	26.74	200	236	15 4
9 6	60 1½	13 0	6,060	Twin screw horizontal compound.	12.4	3,700	33.64	400	410	18 3
9 6	55 10	14 6	3,990	Twin screw inclined compound.	10.5	1,600	27.67	250	250	14 7½

Complement.		Cost of hull and machinery.	Date of act authorizing building or completion.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
fficers.	Men.						
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Apr. 23, 1895
13	136	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Oct. 27, 1891
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1875	.....	Feb. 20, 1896
19	172	†$1,628,950	Mar. 3, 1887	June 14, 1889	July, 1889	June 14, 1892	Feb. 13, 1893
22	186	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1875	.....	Dec. 10, 1896
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Apr. 15, 1896

ppropriation to complete Amphitrite, Miantonomoh, Monadnock, Puritan, and Terror, $3,178,046.
ontract price.

Table of vessels of the United

ARMORED VESSELS—SINGLE

Name.	Type.	Keel laid.	By whom and where built.	Condition.	Dimensions.			Displacement.	Indicated horse-power.
					Length between perpendiculars.	Breadth.	Mean draft.		
					Feet.	*Ft. In.*	*Ft. In*	*Tons.*	
Ajax	Low free-board single-turret monitor.	1862	Snowdon & Mason, Pittsburg, Pa.	Camden, N. J., for use of naval militia.	225	43 8	13 6	2,100	340
Comanche	do	1862	Donahue, Ryan & Secor, Jersey City, N. J.	San Francisco, Cal., for use of naval militia.	200	46 0	11 6	1,875	340
Canonicus	do	1862	Harrison Loring, Boston, Mass.	In ordinary, League Island, Pa.	225	43 8	13 6	2,100	340
Catskill	do	1862	John Ericsson, Brooklyn, N. Y.	do	200	46 0	11 6	1,875	340
Jason	do	1862	John Ericsson, Chester, Pa.	do	200	46 0	11 6	1,875	340
Lehigh	do	1862	do	do	200	46 0	11 6	1,875	340
Mahopac	do	1862	Z. & F. Secor, Jersey City, N.J.	do	225	43 8	13 6	2,100	340
Manhattan	do	1862	Perine, Secor & Co., Jersey City, N. J.	do	225	43 8	13 6	2,100	340
Montauk	do	1862	John Ericsson, Brooklyn, N. Y.	do	200	46 0	11 6	1,875	340
Nahant	do	1862	Harrison Loring, Boston, Mass.	do	200	46 0	11 6	1,875	340
Nantucket	do	1862	Atlantic Works, Boston, Mass.	Southport, N. C., for use of naval militia.	200	46 0	11 6	1,875	340
Passaic	do	1862	John Ericsson, Brooklyn, N. Y.	Brunswick, Ga., for use of naval militia.	200	46 0	11 6	1,875	340
Wyandotte	do	1862	Miles Greenwood, Cincinnati, Ohio.	For use of naval militia, Connecticut.	225	43 8	13 6	2,100	340

Navy—Continued.

ET MONITORS (IRON).

ype of engine.	Speed, in knots.	Batteries.		Armor.		Cost of hull and machinery.	Date of act authorizing building.
		Main.	Secondary.	Sides.	Turret.		
				In.	*In.*		
le-screw grasshop-r.	5 to 6	2 XV" S. B....	None	5	10	$626,582.24	Apr. 17, 1862
lo	5 to 6	None	.....do	5	11	613,164.98	Do.
lo	6	2 XV" S. B....	2 12-pdr. H.	5	10	622,963.22	Do.
lo	6	.....do	None	5	11	427,766.78	Do.
lo	5 to 6	.....do	.....do	5	11	422,766.73	Do.
lo	5 to 6	.....do	.....do	5	11	422,726.28	Do.
lo	6	.....do	.....do	5	10	635,374.55	Do.
lo	6	.....do	.....do	5	10	628,879.27	Do.
lo	5 to 6	.....do	.....do	5	11	423,027.49	Do.
lo	5 to 6	.....do	.....do	5	11	413,515.14	Do.
lo	5 to 6	.....do	.....do	5	11	408,691.37	Do.
lo	5 to 6	.....do	.....	5	11	423,171.69	Do.
lo	6	.....do	.....	5	10	633,327.84	Do.

Table of vessels of the United

UNARMORED

Name.	Type.	Rig.	By whom and where built or building.	Condition or service.
Atlanta*	Protected cruiser	Brig	John Roach & Sons, Chester, Pa.	Repairing at navy-yard, N. Y.
Baltimore	do	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Repairing at Mare Island, Cal.
Boston	do	Brig	John Roach & Sons, Chester, Pa.	Asiatic Station.
Charleston	do	Two military masts.	Union Iron Works, San Francisco, Cal.	Repairing at Mare Island, Cal.
Chicago*	do	Bark	John Roach & Sons, Chester, Pa.	Repairing at New York Navy-Yard.*
Cincinnati	do	Two-masted schooner.	U. S. navy-yard, Brooklyn, N. Y.	North Atlantic Station.
Columbia	do	do	Wm. Cramp & Sons, Philadelphia, Pa.	do
Detroit	Cruiser	do	Columbian Iron Works, Baltimore, Md.	Asiatic Station.
Marblehead	do	do	City Point Works, Boston, Mass.	European Station.
Montgomery	do	do	Columbian Iron Works, Baltimore, Md.	North Atlantic Station.
Minneapolis	Protected cruiser	do	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship European Station.
Newark	do	Bark	Wm. Cramp & Sons, Philadelphia, Pa.	North Atlantic Station
Olympia	do	Two-masted schooner.	Union Iron Works, San Francisco, Cal.	Flagship Asiatic Station.
Philadelphia	do	do	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship Pacific Station.
Raleigh	do	do	U. S. navy-yard, Norfolk, Va.	North Atlantic Station.
San Francisco	do	Three-masted schooner.	Union Iron Works, San Francisco, Cal.	European Station.

*To have new machinery, modern battery, and different rig.

—Continued.

ELS.

uipped ready tores on board. l supply.									Maximum draft at lowest point of keel. Ship ready for sea, bunkers full.
Mean draft.		Displacement.	Type of engine.	Speed in knots per hour.	Maximum indicated horse power.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	
Ft.	*In.*	*Tons.*					*Tons.*	*Tons.*	*Ft.* *In.*
16	10	3,000	Single screw horizontal compound.	15.60	4,030	20.03	.....	490	21 0½
19	6	4,413	Twin screw horizontal triple expansion.	20.096	10,064	25.89	400	1,143.87	23 11½
16	10	3,000	Single screw horizontal compound.	15.60	4,030	20.03	.....	495.80	21 0½
18	7	3,730	Twin screw horizontal compound.	18.20	6,666	23	328	757.70	21 8½
19	0	4,500	Twin screw compound, overhead beam.	15.10	5,064	26.92	.....	831.94	22 6½
18	0	3,213	Twin screw vertical triple expansion.	†19	†10,000	20.04	350	460.09	20 2½
22	6½	7,375	Triple screw vertical triple expansion.	22.8	18,509	36 87	750	1,670	25 7
14	7	2,089	Twin screw vertical triple expansion.	18.71	5,227	15.75	200	340	16 8
14	7	2,089	.....do.....	18.44	5,451	15.75	200	340	16 8
14	7	2,089	.....do.....	19.05	5,580	15.75	200	340	16 8
22	6½	7,375	Triple screw vertical triple expansion.	23.073	20,862	36.87	750	1,670	25 7
18	9	4,098	Twin screw horizontal triple expansion.	19	8,869	25	400	809.46	22 7½
21	6	5,870	Twin screw vertical triple expansion.	21.686	17,313	29.36	400	1,169.66	24 9½
19	2½	4,324	Twin screw horizontal triple expansion.	19.678	8,815	25.89	400	1,085.6	23 5
18	0	3,213	Twin screw vertical triple expansion.	†19	†10,000	20.04	350	460.09	20 2½
18	9	4,098	Twin screw horizontal triple expansion.	19.525	9,913	25	350	627.76	22 3½

† Estimated.

Table of vessels of the United

UNARMORED STEEL

Name.	Batteries.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Slopes.	Flat.
PROTECTED CRUISERS.				*Inches.*	*Inches.*
Atlanta	6 6″ B. L. R. 2 8″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 4 1-pdr. R. F 2 47ᵐᵐ H. R. C. 2 Gatlings		1½	1½
Baltimore	4 8″ B. L. R. 6 6″ B. L. R.	4 6-pdr. R. F 2 3-pdr. R. F 2 1-pdr. R. F 4 37ᵐᵐ H. R. C. 2 Gatlings	†4	4	2½
Boston	6 6″ B. L. R. 2 8″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 2 1-pdr. R. F 2 47ᵐᵐ H. R. C. 2 37ᵐᵐ H. R. C. 2 Gatlings		1½	1½
Charleston	2 8″ B. L. R. 6 6″ B. L. R.	4 6-pdr. R. F 2 3-pdr. R. F 2 1-pdr. R. F 4 37ᵐᵐ H. R. C. 2 Gatlings	†4	3	2
Chicago	4 8″ B. L. R. 8 6″ B. L. R. 2 5″ B. L. R.	9 6-pdr. R. F 4 1-pdr. R. F 2 37ᵐᵐ H. R. C. 2 Gatlings		1½	1½
Cincinnati	10 5″ R. F. guns 1 6″ R. F. gun	8 6-pdr. R. F 2 1-pdr. R. F 2 Gatlings	4	2½	1
Columbia	1 8″ B. L. R. 2 6″ R. F. guns 8 4″ R. F. guns	12 6-pdr. R. F 4 1-pdr. R. F 4 Gatlings	4	4	2½
CRUISERS.					
Detroit	9 5″ R. F. guns	6 6-pdr. R. F 2 1-pdr. R. F 1 Gatling	3	5 7/16	1 1/16
Marblehead	9 5″ R. F. guns	6 6-pdr. R. F 2 1-pdr. R. F 2 Gatlings	3	5 7/16	1 1/16
Montgomery	10 5″ R. F. guns	6 6-pdr. R. F 2 1-pdr. R. F 2 Gatlings	3	5 7/16	1 1/16
PROTECTED CRUISERS.					
Minneapolis	1 8″ B. L. R. 2 6″ R. F. guns 8 4″ R. F. guns	12 6-pdr. R. F 4 1-pdr. R. F 4 Gatlings	4	4	2½
Newark	12 6″ B. L. R	4 6-pdr. R. F 4 3-pdr. R. F 4 37ᵐᵐ H. R. C. 4 Gatlings	†6	3	2
Olympia	10 5″ R. F. guns 4 8″ B. L. R.	14 6-pdr. R. F 6 1-pdr. R. F 4 Gatlings	6	4½	2
Philadelphia	12 6″ B. L. R	4 6-pdr. R. F 4 3-pdr. R. F 2 1-pdr. R. F 3 37ᵐᵐ H. R. C. 4 Gatlings	†4	4	2½
Raleigh	10 5″ R. F. guns 1 6″ R. F. gun	8 6-pdr. R. F 4 1-pdr. R. F 2 Gatlings	4	2½	1
San Francisco	12 6″ B. L. R	4 6-pdr. R. F 4 3-pdr. R. F 2 1-pdr. R. F 3 37ᵐᵐ H. R. C. 4 Gatlings	4	3	2

* Contract price.

† Port opening in ship, tubes not fitted.

Navy—Continued.

ELS—Continued.

nplement.		Cost of hull and machinery.	Date of act authorizing the building.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
ers.	Men.						
19	265	* $617,000	Mar. 3, 1883	July 23, 1883	Nov. 8, 1883	Jan. 23, 1885	July 19, 1886
36	350	* 1,325,000	Aug. 3, 1886	Dec. 17, 1886	May 5, 1887	June 17, 1888	Jan. 7, 1890
19	265	* 619,000	Mar. 3, 1883	July 23, 1883	Nov. 15, 1883	Jan. 23, 1885	May 2, 1887
20	280	* 1,017,500	Mar. 3, 1885	Dec. 28, 1886	Jan. 20, 1887	June 28, 1888	Dec. 26, 1889
33	376	* 889,000	Mar. 3, 1883	July 26, 1883	Dec. 29, 1883	Jan. 26, 1885	Apr. 17, 1889
20	292	‡ 1,100,000	Sept. 7, 1888	.....	Jan., 1890	....	June 16, 1894
30	447	* 2,725,000	June 30, 1890	Nov. 19, 1890	Dec. 30, 1890	May 19, 1893	Apr. 23, 1894
20	254	* 612,500	Sept. 7, 1888	Nov. 2, 1889	Feb., 1890	May 2, 1892	July 20, 1893
20	254	* 674,000	Sept. 7, 1888	Nov. 11, 1889	Oct., 1890	May 11, 1892	Apr. 2, 1894
20	254	* 612,500	Sept. 7, 1888	Nov. 2, 1889	Feb., 1890	May 2, 1892	Feb. 28, 1894
30	447	* 2,690,000	Mar. 2, 1891	Aug. 31, 1891	Dec. 16, 1891	Aug. 31, 1893	Dec. 13, 1894
34	350	* 1,248,000	Mar. 3, 1885	Oct. 27, 1887	June 12, 1888	Oct. 27, 1889	Feb. 2, 1891
34	378	* 1,796,000	Sept. 7, 1888	July 10, 1890	June, 1891	Apr. 1, 1893	Feb. 5, 1895
34	350	* 1,350,000	Mar. 3, 1887	Oct. 27, 1887	Mar. 22, 1888	Oct. 27, 1889	July 28, 1890
20	292	‡ 1,100,000	Sept. 7, 1888	.....	Dec., 1889	.....	Apr. 17, 1894
33	350	* 1,428,000	Mar. 3, 1887	Oct. 26, 1887	Aug., 1888	Oct. 26, 1889	Nov. 15, 1890

‡ Limit of cost. § Water-tight deck.

Table of vessels of the United

UNARMORED STEEL

Name.	Type.	Rig.	By whom and where built or building.	Condition or service.
GUNBOATS.				
Bennington	Gunboat	Three-masted schooner.	N. F. Palmer & Co., Chester, Pa.	Pacific station.
Castine	do	Two-masted schooner.	Bath Iron Works, Bath, Me.	South Atlantic station.
Concord	do	Three-masted schooner.	N. F. Palmer & Co., Chester, Pa.	Repairing at Mare Island, Cal.
Helena	Light-draft gunboat	One military mast.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	Building
Machias	Gunboat	Two-masted schooner	Bath Iron Works, Bath, Me.	Asiatic station.
Nashville	Light-draft gunboat	Two-masted schooner, pole masts.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	Building
Petrel	Gunboat	Barkentine	Columbian Iron Works, Baltimore, Md.	Repairing at Mare Island, Cal.
Wilmington	Light-draft gunboat	One military mast.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	Building
Yorktown	Gunboat	Three-masted schooner.	Wm. Cramp & Sons, Philadelphia, Pa.	Asiatic station.

UNARMORED COM

Annapolis	Composite gunboat	Barkentine	Lewis Nixon, Elizabethport, N. J.	Building
Vicksburg	do	do	Bath Iron Works, Bath, Me.	do
Newport	do	do	do	do
Princeton	do	do	J. H. Dialogue & Son, Camden, N. J.	do
Wheeling	do	Two-masted schooner.	Union Iron Works, San Francisco, Cal.	do
Marietta	do	do	do	do

Navy—Continued.

ELS—Continued.

fully equipped ready sea, all stores on board. rmal coal supply.	Extreme breadth.	Mean draft.	Displacement.	Type of engine.	Speed in knots per hour.	Maximum indicated horsepower.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
n.	Ft. In.	Ft. In.	Tons.					Tons.	Tons.	Ft. In.
0	36 0	14 0	1,710	Twin screw horizontal triple expansion.	17.5	3,436	13.72	200	403	16 7
0	32 1½	12 0	1,177	Twin screw vertical triple expansion.	16.082	2,199	10.84	125	292.6	14 0
0	36 0	14 0	1,710	Twin screw horizontal triple expansion.	16.8	3,405	13.72	200	401	16 7
9	40 1⅛	9 0	1,892	Twin screw vertical triple expansion.	13	1,600	17.08	100	279.73	9 9⅛
0	32 1½	12 0	1,177	.....do.....	15.46	2,046	10.84	125	292.6	14 0
0	38 3	11 0	1,871	Twin screw vertical quadruple expansion.	14	1,750	13.16	150	399.31	12 7⅛
3	31 0	11 7	892	Single screw horizontal compound.	11.79	1,095	9.28	100	200	13 1
9	40 1⅛	9 0	1,892	Twin screw vertical triple expansion.	13	1,600	17.08	100	279.73	9 9⅛
0	36 0	14 0	1,710	Twin screw horizontal triple expansion.	16.14	3,392	13.72	200	380	16 7

TE VESSELS.

0	36 0	12 0	1,000	Single screw vertical triple expansion.	12	800	10.75	100	238	13 1
0	36 0	12 0	1,000	.....do.....	12	800	10.75	100	238	13 1
0	36 0	12 0	1,000	.....do.....	12	800	10.75	100	238	13 1
0	36 0	12 0	1,000	.....do.....	12	800	10.75	100	238	13 1
0	34 0	12 0	1,000	Twin screw vertical triple expansion.	12	800	10.17	120	236	12 11
0	34 0	12 0	1,000	.....do.....	12	800	10.17	120	236	12 7⅛

Table of vessels of the United

UNARMORED STEEL

Name.	Batteries.			Watertight deck.	
	Main.	Secondary.	Torpedo tubes.	Slopes.	Flat.
GUNBOATS.				*Inch.*	*Inch.*
Bennington	6 6″ B. L. R.	2 6-pdr. R. F. 2 3-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	*6	½	½
Castine	8 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	*1	½	½
Concord	6 6″ B. L. R.	2 6-pdr. R. F. 2 3-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	*6	½	½
Helena	8 4″ R. F. guns.	4 6-pdr. R. F. G. 4 1-pdr. R. F. G. 2 Gatlings	1	½	½
Machias	8 4″ R. F. guns.	4 6-pdr. R. F. 2 1-pdr. R. F.	*1	½	½
Nashville	8 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G. 2 Gatlings	1	½	½
Petrel	4 6″ B. L. R.	2 3-pdr. R. F. 1 1-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	None.	½	½
Wilmington	8 4″ R. F. guns.	4 6-pdr. R. F. G. 4 1-pdr. R. F. G. 2 Gatlings	1	½	½
Yorktown	6 6″ B. L. R.	2 6-pdr. R. F. 2 3-pdr. R. F. 1 1-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	*6	½	½
					UNARMORED COM
Annapolis	6 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	None.	None.	None.
Vicksburg	6 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	None.	None.	None.
Newport	6 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	None.	None.	None.
Princeton	6 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	None.	None.	None.
Wheeling	6 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	None.	None.	None.
Marietta	6 4″ R. F. guns.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	None.	None.	None.

*Port opening in ship; tubes not fitted.

ites Navy—Continued.

SSELS—Continued.

Complement.		Cost of hull and machinery.	Date of act authorizing the building.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
fficers.	Men.						
16	181	† $490,000	Mar. 3, 1887	Nov. 15, 1887	June, 1888	May 15, 1889	June 20, 1891
11	143	† 318,500	Mar. 2, 1889	Apr. 12, 1890	Feb., 1891	Apr. 12, 1892	Oct. 16, 1893
13	180	† 490,000	Mar. 3, 1887	Nov. 15, 1887	May, 1888	May 15, 1889	Feb. 14, 1891
10	160	† 280,000	Mar. 3, 1893	Jan. 29, 1894	Oct. 16, 1894	Jan. 29, 1896	.....
11	143	† 318,500	Mar. 2, 1889	Apr. 12, 1890	Feb., 1891	Apr. 12, 1892	July 20, 1893
11	158	† 280,000	Mar. 3, 1893	Jan. 22, 1894	Aug. 9, 1894	Jan. 22, 1896	.....
10	122	† 247,000	Mar. 3, 1885	Dec. 22, 1886	Aug. 27, 1887	Dec. 22, 1887	Dec. 10, 1889
10	160	† 280,000	Mar. 3, 1893	Jan. 29, 1894	Oct. 16, 1894	Jan. 29, 1896	.....
14	178	† 455,000	Mar. 3, 1885	Jan. 31, 1887	May 14, 1887	Jan. 31, 1888	Apr. 23, 1889
OSITE VESSELS.							
11	135	† 227,000	Mar. 2, 1895	Nov. 20, 1895	Apr., 1896	Feb. 20, 1897	.....
11	135	† 228,400	Mar. 2, 1895	Nov. 15, 1895	Mar., 1896	Feb. 15, 1897	.....
11	135	† 229,400	Mar. 2, 1895	.....do	.....do	.....do	.....
11	135	† 230,000	Mar. 2, 1895	Nov. 20, 1895	May, 1896	Feb. 20, 1897	.....
11	135	† 219,000	Mar. 2, 1895	Nov. 26, 1895	Apr. 11, 1896	Feb. 20, 1897	.....
11	135	† 223,000	Mar. 2, 1895	.....do	Apr. 13, 1896	.....do	.....

† Contract price.

Table of vessels of the United

UNARMORED STEEL

Name.	Type.	Rig.	By whom and where built or building.	Condition or service.
SPECIAL CLASS.				
Bancroft	Gunboat	Two-masted schooner.	Moore & Sons, Elizabethport, N. J.	European station.
Dolphin	Dispatch boat	Three-masted schooner.	John Roach & Sons, Chester, Pa.	Special service.
Vesuvius	Dynamite gunboat		Wm. Cramp & Sons, Philadelphia, Pa.	In ordinary, League Island, Pa.
TORPEDO BOATS.				
Cushing	Steel torpedo boat	None	Herreshoff M'f'g Co., Bristol, R. I.	Special service.
Ericsson	Steel torpedo boat	None	Iowa Iron Works, Dubuque, Iowa.	Awaiting commission.
Stiletto	Wood torpedo boat	None	Purchased from Herreshoff M'f'g Co.	Torpedo practice, Newport, R. I.
Torpedo boat No. 3.	Steel torpedo boat	None	Columbian Iron Works, Baltimore, Md.	Building
Torpedo boat No. 4.	Steel torpedo boat	None	Columbian Iron Works, Baltimore, Md.	Building
Torpedo boat No. 5.	Steel torpedo boat	None	Columbian Iron Works, Baltimore, Md.	Building
Torpedo boat No. 6.	Steel torpedo boat	None	Herreshoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 7.	Steel torpedo boat	None	Herreshoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 8.	Steel torpedo boat	None	Moran Brothers' Co., Seattle, Wash.	Building
Submarine torpedo boat.	Steel torpedo boat	None	Columbian Iron Works, Baltimore, Md.*	Building
Torpedo boat No. 9.	Steel torpedo boat	None	Bath Iron Works, Bath, Me.	Building
Torpedo boat No. 10.	Steel torpedo boat	None	Bath Iron Works, Bath, Me.	Building
Torpedo boat No. 11.	Steel torpedo boat	None	Union Iron Works, San Francisco, Cal.	Building
Torpedo boat No. 12.	Steel torpedo boat	None	Wolff & Zwicker, Portland, Oreg.	Building
Torpedo boat No. 13.	Steel torpedo boat	None	Wolff & Zwicker, Portland, Oreg.	Building
Torpedo boat No. 14.	Steel torpedo boat	None	Herreshoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 15.	Steel torpedo boat	None	Herreshoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 16.	Steel torpedo boat	None	Herreshoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 17.	Steel torpedo boat	None	The Chas. Hillman Co., Philadelphia, Pa.	Building
Torpedo boat No. 18.	Steel torpedo boat	None	Columbian Iron Works, Baltimore, Md.	Building

* Contractors, John P. Holland Torpedo Boat Co., New York, N. Y.

—Continued.

Continued.

quipped ready stores on board. al supply.			Type of engine.	Speed in knots per hour.	Maximum indicated horsepower.	Tons per inch immersion at normal draft.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
	Mean draft.	Displacement.							
n.	*Ft. In.*	*Tons.*					*Tons.*	*Tons.*	*Ft In.*
0	13 4	976	Twin screw vertical triple expansion.	14.37	1,213	9.52	100	165	13 4
0	14 3	1,486	Single screw vertical compound.	15.50	2,253	13.31	.....	273.74	17 1½
5½	10 7½	929	Twin screw vertical triple expansion.	21.42	3,794.86	10.65	.....	152.2	11 2½
3	4 10½	105	Twin screw vertical quadruple expansion.	22.5	1,720	3.10	.....	36	5 6
5	4 9	120	.....do.....	*24	1,800*	3.56	9	35.40	5 6½
0	3 0	31	Single screw vertical.	18.22	359	.....	.....	.....	.....
0½	5 0	142	Twin screw vertical quadruple expansion.	*24.5	2,000*	4.07	9	42	5 8
0½	5 0	142	.....do.....	*24.5	2,000*	4.07	9	42	5 8
0½	5 0	142	.....do.....	*24.5	2,000*	4.07	9	42	5 8
0	5 6	.....	.....do.....	*27.5	.....	.....	.....	.....	.....
0	5 6	.....	.....do.....	*27.5	.....	.....	.....	.....	.....
0	5 6	182	.....do	*26.0	3,200*	4.65	12	60	6 6½
5	.....	168	Twin screw triple expansion. †	*8.0	1,200*§	.....	.....	.....	.....
4½	4 7½	146.4	Twin screw vertical triple expansion.	*30½	4,200	.....	.....	32	8 0
4½	4 7½	146.4	.....do.....	*30½	4,200	.....	.....	32	8 0
4	6 0	273	.....do.....	*30	5,600	.....	.....	76	6 0
3½	5 4	128	.....do.....	*22½	1,750	.....	.....	.....	5 4
3½	5 4	128	.....do.....	*22½	1,750	3.23	.....	.....	5 4
5	4 6	103	.....do.....	*22½	1,750	.....	.....	28	4 6
5	3 6	46½	Single screw vertical triple expansion.	*20	850	.....	.....	.....	5 3
5	3 6	46½	.....do.....	*20	850	.....	.....	.....	5 3
5	4 3	65	.....do.....	*20	850	.....	.....	.....	5 0
5	4 3	65	.....do.....	*20	850	.....	.....	.....	5 0

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ver all.
le screw operated by storage cells to supply an electric motor to propel the vessel when ıbmerged at a speed of 8 knots for 6 hours.
horsepower for 15 knots in light condition.

Table of vessels of the United

UNARMORED STEEL

Name.	Batteries.			Water-tight deck.	
	Main.	Secondary.	Torpedo tubes.	Slopes.	Flat.
SPECIAL CLASS.					
Bancroft	4 4" R. F. guns	2 6-pdr. R. F. 2 3-pdr. R. F. 1 1-pdr. R. F. 1 37mm H. R. C. 1 Gatling	2	½	½
Dolphin	2 4" R. F. guns	2 6-pdr. R. F. 2 47mm H. R. C. 2 Gatlings	None.	None.	None.
Vesuvius	3 dynamite guns, 15" cal.	3 3-pdr. R. F.	do	½	½
TORPEDO BOATS.					
Cushing	3 1-pdr. R. F.		3 18" Whitehead.		
Ericsson	3 1-pdr. R. F.		3 18" Whitehead.		
Stiletto					
Torpedo boat No. 3	3 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 4	3 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 5	3 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 6	4 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 7	4 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 8	4 1-pdr. R. F.		3 18" Whitehead.		
Submarine torpedo boat			2		
Torpedo boat No. 9	4 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 10	4 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 11	6 6-pdr. R. F.		2 18" Whitehead.		
Torpedo boat No. 12	2 1-pdr. R. F.		4 18" Whitehead.		
Torpedo boat No. 13	2 1-pdr. R. F.		4 18" Whitehead.		
Torpedo boat No. 14	3 1-pdr. R. F.		3 18" Whitehead.		
Torpedo boat No. 15	1 1-pdr. R. F.		2 18" Whitehead.		
Torpedo boat No. 16	1 1-pdr. R. F.		2 18" Whitehead.		
Torpedo boat No. 17	1 1-pdr. R. F.		2 18" Whitehead.		
Torpedo boat No. 18	1 1-pdr. R. F.		2 18" Whitehead.		

tes Navy—Continued.

SSELS—Continued.

Complement.		Cost of hull and machinery.	Date of act authorizing the building.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
ficers.	Men.						
10	120	$250,000	Sept. 7, 1888	July 18, 1890	Feb., 1891	July 18, 1892	Mar. 3, 1893
7	108	* 315,000	Mar. 3, 1883	July 23, 1883	Oct. 11, 1883	July 23, 1884	Dec. 8, 1885
6	64	* 350,000	Aug. 3, 1886	Feb. 11, 1887	Sept., 1887	Feb. 11, 1888	June 7, 1890
3	20	* 82,750	Aug. 3, 1886	Mar. 1, 1888	Apr., 1888	June 1, 1889	Apr. 22, 1890
3	20	* 113,500	June 30, 1890	Oct. 8, 1891	July 21, 1892	Oct. 8, 1892	.....
.....	.....	† 25,000	.....	.....	.....	.....	.....
4	16	* 97,500	July 26, 1894	May 3, 1895	May 1, 1896	Aug. 3, 1896	.....
4	16	* 97,500	July 26, 1894	May 3, 1895	May 6, 1896	Aug. 3, 1896	.....
4	16	* 97,500	July 26, 1894	May 3, 1895	May 8, 1896	Aug. 3, 1896	.....
4	20	* 147,000	Mar 2, 1895	Oct. 19, 1895	.....	Aug. 19, 1896	.....
4	20	* 147,000	Mar. 2, 1895	Oct. 19, 1895	.....	Nov. 19, 1896	.....
4	20	* 160,000	Mar. 2, 1895	Oct. 19, 1895	June 26, 1896	Jan. 19, 1897	.....
.....	.....	* 138,000	Mar. 3, 1893	Mar. 13, 1895	June 23, 1896	Mar. 13, 1896	.....
.....	.....	* 194,000	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 194,000	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 227,500	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 81,500	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 81,546	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 85,000	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 39,000	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 39,000	June 10, 1896	Oct. 6, 1896	.....	Oct. 6, 1897	.....
.....	.....	* 46,500	June 10, 1896	Oct. 7, 1896	.....	Oct. 7, 1897	.....
.....	.....	* 45,000	June 10, 1896	Oct. 7, 1896	.....	Oct. 7, 1897	.....

* Contract price. † Limit of cost.

Table of vessels of the United

IRON AND WOODEN

Name.	Built.			Condition or service.	Rig.
	When.	Where.	By whom.		
IRON.					
Alarm	1874	New York, N. Y.	United States	In ordinary at navy-yard, New York.	None
Alert	1873–1875	Chester, Pa	John Roach	Pacific station	Bark
Monocacy	1863	Baltimore, Md	A. & W. Denmead & Son.	Asiatic station	Schooner
Michigan	1844	Erie, Pa	United States	Sp'c'l service, Northwestern Lakes.	Barkentine
Pinta	1865	Chester, Pa	Reany, Son & Archbold.	Special service, Alaska.	Schooner
Ranger	1873–1876	Wilmington, Del.	Harlan & Hollingsworth.	Pacific station	Bark
WOODEN.					
Adams	1874–1876	Boston, Mass	United States and Donald McKay.	Repairing at Mare Island, Cal.	do
Alliance	1873–1876	Norfolk, Va	United States	Training service	do
Enterprise	1873–1876	Kittery, Me	John W. Griffith and United States.	Public marine school, Boston, Mass.	do
Essex	1874–1876	Kittery and Boston.	United States and Donald McKay.	Training service	do
Hartford	1858	Boston, Mass	United States	Rebuilding, Mare Island, Cal.	do
Lancaster	1858	Philadelphia, Pa.	do	South Atlantic station.	Ship
Marion	1871–1875	Kittery, Me	do	Pacific station	Bark
Mohican	1872–1883	Mare Island, Cal.	do	In ordinary, Mare Island, Cal.	do
Thetis		Dundee, Scotland	Alex. Stevens & Sons.	Special service	do
Yantic	1864	Philadelphia, Pa.	United States	South Atlantic station.	do

* Anthracite.

Navy—Continued.

I VESSELS.

ensions.		Displacement.	Indicated horsepower.	Speed in knots per hour.	Batteries.		Bunker capacity.	Complement.	
Breadth.	Mean draft.				Main.	Secondary.		Officers.	Men.
Ft.In.	*Ft.In.*	*Tons.*					*Tons.*		
28 0	10 6	800	600	10	.....	.....	*405	.....	.....
32 0	12 9	1,020	365	10	2 IX" S. B 1 60-pdr. B. L. R.	2 6-pdr. 2 37mm 1 Gatling	*190	21	127
35 0	9 0	1,370	850	11.2	4 VIII" S. B 2 60-pdr. B. L. R.	1 3" B. L. H 1 12-pdr. S. B. howtz 4 37mm H. R. C. 2 47mm H. R. C. 2 Gatlings	†224	12	114
27 1½	9 0	685	305	10.5	4 30-pdr. B. L. R	3 3" B. L. H 2 Gatlings	*125	.....	.....
26 0	10 0	550	190	8.5	2 12-pdr. S.B. howtz	1 Gatling	*111	8	37
32 0	12 9	1,020	365	10	2 IX" S. B 1 VIII" M. L. R. 1 60-pdr. B. L. R.	1 3" B. L. H 2 37mm H. R. C. 1 Gatling	*146	21	127
35 0	14 3	1,375	550	9.8	Battery landed.	Battery landed.	*150	20	160
35 0	14 3	1,375	668	9.98	6 4" R. F. G.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	*159	18	160
35 0	14 3	1,375	790	11.4	4 32-pdr	2 3" B. L. H.	*130	.....	.....
35 0	14 3	1,375	505	10.4	6 4" R. F. G.	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	†130	15	170
44 0	18 2	2,790	2,000	12	13 5" R. F. G.	10 6-pdr. R. F. G.	*286	32	285
46 0	19 2	3,250	733	9.6	10 5" R. F. G. 2 5" B. L. R.	2 6-pdr. R. F. 2 1-pdr. R. F. 2 37mm H. R. C. 4 Gatlings	*326	.....	.....
37 0	16 6	1,900	753	11.25	Battery landed.	Battery landed.	*135	18	176
37 0	16 6	1,900	613	10.65	8 IX" S. B 1 8" M. L. R. 1 60-pdr. B. L. R.	1 3" B. L. H 2 20-pdr. B. L. R. 2 37mm H. R. C. 1 Gatling	*162	21	193
30 3	18 0	1,250	490	7.55	....	1 53mm H. R. C.	300	10	98
30 0	12 2	900	225	8.30	2 IX" S. B 1 8" M. L. R. 1 60-pdr. B. L. R.	1 12-pdr. S. B. howtz 1 Gatling 1 3" B. L. H.	*130	20	134

† Bituminous. ‡ To be refitted with new machinery and modern battery.

Table of vessels of the United

WOODEN SAILING

Name.	Built. When.	Built. Where.	Built. By whom.	Condition or service.	Rig.
Constellation	1854	Norfolk, Va	United States	Stationary training ship, Newport, R. I.	Ship
Jamestown	1845	do	do	Hospital ship	do
Monongahela	1862	Philadelphia, Pa	do	Practice ship, Annapolis, Md.	do
Portsmouth	1843	Kittery, Me	do	For use of naval militia, New Jersey.	do
Saratoga	1842	do	do	Public Marine School, Philadelphia, Pa.	do
St. Mary's	1844	Washington, D.C.	do	Public Marine School, New York, N. Y.	do

STEEL, IRON, A

Name.	Built. When.	Built. Where.	Built. By whom.	Material.	Condition or service.	Rig.
Fortune	1865	Boston	James Tetlow	Iron	To be repaired at Norfolk, Va.	Schoone
Iwana	1891	do	City Point Iron Works.	Steel	Yard tug, Boston, Mass.	
Leyden	1866	do	James Tetlow	Iron	Yard tug, Portsmouth, N. H.	Schoone
Narkeeta	1891	do	City Point Iron Works.	Steel	Yard tug, New York, N. Y.	
Nina	1865	Chester	Reany, Son & Archbold.	Iron	Navy-yard, New York, N. Y.	Schooner
Rocket	1863		Purchased	Wood	Navy-yard, Boston, Mass.	
Standish	1865	Boston	James Tetlow	Iron	Naval Academy, Annapolis, Md.	Schooner
Traffic	1891	South Brooklyn, N. Y.	D. McCarty	Wood	Navy-yard, New York.	Derrick mast.
Triton	1888	Camden, N. J.	John H. Dialogue.	Steel	Yard tug, Washington, D. C.	
Unadilla	1894	Mare Island, Cal.	Government	do	Yard tug, Mare Island.	Schooner
Wahneta	1891	Boston	City Point Iron Works.	do	Yard tug, Norfolk.	
Tugboat No. 5	1895	Norfolk, Va	Government	do	Building	

...ee *Navy*—Continued.

SELS.

...ip.	Dimensions. Breadth.	Mean draft.	Displacement.	Batteries. Main.	Secondary.	Complement. Officers.	Men.
	Ft. In.	*Ft. In.*	*Tons.*				
C	42 0	20 0	1,186	8 VIII" S. B.	2 20-pdr. B. L. R.	15	293
C	36 0	16 0	1,150				
C	38 0	16 6	2,100	4 VIII" S. B.	1 3" B. L. H. 2 6-pdr. R. F. G. 4 37mm H. R. C.	21	380
C	38 3	16 6	1,125	11 VIII" S. B. 1 60-pdr. B. L. R.		15	210
C	36 1	16 0	1,025				
C	37 6	15 6	1,025				

DEN STEAM TUGS.

...ip.	Dimensions. Breadth.	Mean draft.	Displacement.	Indicated horse-power.	Speed in knots.	Coal capacity.	Cost of hull and machinery.	Date of act authorizing building.	Contract signed.	Contract date of completion.
	Ft. In.	*Ft. In.*	*Tons*			*Tons*				
C	26 0	9 6	450	340	10	80				
C	20 11½	8 0	192.4	300	11.5	35	* $32,438	Mar. 2, 1889	Dec. 20, 1890	Dec. 20, 1891
C	26 0	9 6	450	340	10	80				
C	20 11½	8 0	192.4	300	11.5	35	* 32,438	Mar. 2, 1889	Dec. 20, 1890	Dec. 20, 1891
C	26 0	8 6	357	368	11.12	80				
S	18 10	7 0	187	147	8.5					
C	26 0	9 6	450	340	10	80				
C	29 4	9 0	280		10					
C	20 9	9 0	212	300	13	45				
C	25 0	10 0	345	500	12	66	† 80,000	July 26, 1894		
C	20 11½	8 0	192.4	300	11.5	35	* 32,438	Mar. 2, 1889	Dec. 20, 1890	Dec. 20, 1891
C	21 0	8 0	225	450	12	30	† 25,000	Mar. 2, 1895		

* Contract prices. † Appropriated. ‡ Length on load water line.

Table of vessels of the United

WOODEN STEAM VESSELS

Name.	Built.			Condition or service.	Rig.
	When.	Where.	By whom.		
Franklin	1855–1865	Kittery, Me.	United States	Receiving ship, Norfolk, Va.	Housed over.
Iroquois	1858	New York, N. Y.	do	Transferred to Marine Hospital Service.	Bark.
Minnesota	1855	Washington, D. C.	do	For use of naval militia, Massachusetts.	Housed over.
Nipsic	1873–1879	do	do	Naval station, Puget Sound.	Bark.
Omaha	1867–1869	Philadelphia, Pa.	do	Transferred to Marine Hospital Service.	do
Pensacola	1858–1862	Pensacola, Fla.	do	Being fitted for temporary training station, navy-yard, Mare Island.	Ship
Richmond	1858	Norfolk, Va.	do	Receiving ship, navy-yard, League Island, Pa.	do
Swatara	1872	New York, N. Y.	do	Ordered sold, navy-yard, Mare Island.	Bark.
Wabash	1854	Philadelphia, Pa.	do	Receiving ship, Boston, Mass.	Housed over.

WOODEN SAILING VESSELS

Name.	Built.			Condition of service.	Rig.
	When.	Where.	By whom.		
Constitution	1797	Boston, Mass.	United States	In ordinary, navy-yard, Portsmouth, N. H.	Housed over.
Dale	1839	Philadelphia, Pa.	do	For use of naval militia, Baltimore.	do
Independence.	1837	Boston, Mass.	do	Receiving ship, Mare Island, Cal.	do
New Hampshire.	1818	Kittery, Me.	do	For use of naval militia, New York, N. Y.	Ship
St. Louis	1828	Washington, D. C.	do	For use of naval militia, Philadelphia, Pa.	Housed over.
Vermont	1818	Boston, Mass.	do	Receiving ship, New York, N. Y.	do

s Navy—Continued.

'IT FOR SEA SERVICE.

Dimensions.			Displacement.	Indicated horsepower.	Speed in knots per hour.	Batteries.		Coal capacity.	Complement.	
...ndiculars.	Breadth.	Mean draft.				Main.	Secondary.		Officers.	Men.
n.	*Ft. In.*	*Ft. In.*	*Tons.*					*Tons.*		
9	54 3	24 3	5,170	1,050	9	4 IX" S. B.....	1 12-pdr. S. B. howtz...	- -	.....	.....
0	33 10	15 3	1,575	1,202	10.7	Battery landed..	Battery landed	†128	.....	.....
¾	51 4	23 0	4,700	1,000	9.25	{8 IX" S. B..... 1 60-pdr. B. L. R..	{2 3" B. L. H..... 2 20-pdr. B. L. R..... 3 12-pdr. S. B. howtz..	.....	.....	.....
)	35 0	14 3	1,375	839	10.7	4 IX"	.....	*132	.....	...
)	38 0	16 6	2,400	953	11.3	Battery landed..	Battery landed	.....	.....	.....
)	44 6	18 7	3,000	680	9	.....do.....	.....do	†285	.....	.....
)	42 6	17 4½	2,700	692	9.5	{12 IX" S. B..... 1 8" M. L. R ..... 1 60-pdr. B. L. R .	{2 20-pdr. B. L. R..... 1 3" B. L. R..... 2 37mm H. R. C..... 1 Gatling	*265	.....	.....
0	37 0	16 6	1,900	680	10.1	Battery landed..	Battery landed	.....	.....	.....
7	51 4	23 0	4,650	950	9.15	.....	{2 20-pdr. B. L. R..... 2 12 pdr. S. B. howtz..	.....	.....	.....

* Anthracite. † Bituminous.

'IT FOR SEA SERVICE.

Dimensions.			Displacement.	Batteries.	
perpendiculars.	Breadth.	an draft.		Main.	Secondary.
In.	*Ft. In.*	*Ft. In.*	*Tons.*		
5 0	45 0	20 0	2,200	4 32-pdr. S. B	1 12-pdr. S. B. howtz.
7 7	33 10	14 9	675	.....	
) 0	51 6	21 6	3,270	6 32-pdr. S. B.....	{3 12-pdr. S. B. (light). 1 12-pdr. S. B. (heavy). 1 3" B. L. H.
) 3	53 0	25 6	4,150	.....	
6	32 8	15 6	830	.....	
3	53 0	25 6	4,150	1 6" B. L. R.....	{1 6-pdr. R. F. G. 1 3-pdr. R. F. G. 1 1-pdr. R. F. G. 1 37mm H. R. C. 9 12-pdr. S. B. H.

REPORTS FROM NAVAL CONSTRUCTORS, SHOWING THE CONDITION OF WORK ON VESSELS UNDER CONSTRUCTION ON JULY 1, 1896.

The following reports were submitted in compliance with orders from this Bureau, and show in detail the condition of the work on July 1, 1896, on all vessels in course of construction at navy-yards and in the shipyards of contractors:

UNITED STATES NAVY-YARD,
New York, July 13, 1896.

SIR: In compliance with instructions from the Bureau of Construction and Repair, dated May 15, 1896, No. 800A, I have the honor to submit the following report, showing—

Description of the work done on the *Maine, Terror, Puritan, Chicago, Atlanta, Ericsson, Katahdin, Indiana, Massachusetts, Kearsarge,* and Gunboat No. 10 from July 1, 1895, to July 1, 1896, inclusive, and the condition of the work at the latter date.

A tabular statement giving information as to repair work done at this yard from July 1, 1895, to June 30, 1896, inclusive. Three photographic views of the *Puritan*, with negatives, will be forwarded as soon as possible.

U. S. S. MAINE.

Items completed on or before July 1, 1895.—Vertical keel, flat keel, stem, sternpost, rudder, shaft tubes, struts, transverse frames, longitudinal deck beams, bridge beams, skid beams, outside plating, flat keelson, inner bottom, deck plating, platform decks, engine, boiler and shaft bearers, transverse water-tight bulkheads, fore and aft bulkheads, coal-bunker trunks, shaft alleys, water-tight doors, sounding tubes, chain lockers, stanchions, bilge keels, fixed-ammunition rooms, torpedo magazines, deck planking, gun supports and platforms, hammock berthing, side armor, turrets and breastworks, conning tower, pilot house, ceiling in holds, storerooms, etc., wardroom joiner work, cabin joiner work, steerage and warrant officers' joiner work, chronometer and compass lockers, sail room, general and other storerooms, offices, workshops, dispensary, sick bay, pantries, water-closets, washrooms, galley, tables and benches, lamp room, cofferdams, manger, skylights, gratings, rubbing plates, lifeline stanchions, hatch cranes, guard rails, reel, shot, and musket racks, label plates, lumber irons, life-buoy guards, running lights, watch bell, ash chutes, deck pipes, deck lights, warping pipes, air ports, water tanks, coal scuttles, sea steps, bow stoppers, cable nippers, stern pipes, hawse-pipes, chain cable bitts, warping and towing bitts, ringbolts, securing bolts, scuppers, hatch ladders and rungs, hammock hooks, eyebolts, oil tanks, masts, mast partners and steps, attachments for rigging, fife and pin rails ensign and jack staffs, chocks, windlass and bed, steering apparatus, drainage and pumping, ventilation to coal bunkers, fresh air to coal bunkers, forced draught, draft figures, heeling, galvanizing, calking, cementing, testing compartments.

Items of work completed during the year.—Side ladders, boat cradles, boats, planing decks, hatch canopy frames, stowage of torpedoes, clothes lockers, securing furniture, wire matting in dynamo room, ordnance and electrical storerooms, ventilation, voice tubes, magazines, shell rooms, ammunition trolleys and hoists, forward turret, spars, lower booms, blocks, awning stanchions, cleaning, calking, docking, painting, and drawings. New raised manhole rings and covers were begun and completed ready to place on board, but were afterwards shipped to Norfolk.

The ship was trimmed with ballast after completion.

The *Maine* was commissioned September 17, 1895, and sailed from this yard November 5, 1895, drawing forward 22 feet 1 inch, aft 21 feet 8 inches, mean 21 feet 10½ inches.

U. S. S. TERROR.

Items completed before July 1, 1895.—All work interfering with alterations removed; main deck armor plating, berth deck plating, transverse bulkheads, longitudinal bulkheads, sounding tubes, chain lockers, stanchions, superstructure, skid beams, hammock berthing, deck planking, side armor, armored smoke pipe and armored ventilator, turret framing, backing and armor, ceiling in holds and storerooms, mess tables and benches, hatch coamings and skylights, gratings and covers, guard rails, stanchions, hatch cranes, reels, chain stoppers, hawse pipes, compressors, bill boards, mooring bitts, warping chocks, mast and step, towing bitts, ladders, hammock hooks, prison, canopies, signal and ensign staffs, boat davits and booms, steam windlass and capstan, berth-deck stringers, bridge, pilot house, search-light *platforms, furniture,* cooperage, draft figures, cementing, testing.

mpleted during the year.—Boat cradles, life-buoy fittings, anchor davits, l fittings, awning and life-rail stanchions, turret tops, turret aprons, galley, ets, watertight doors, wing passages, mess and clothes lockers, dynamo tral station, pumping and drainage, ventilation (remodeled) storerooms, arters, magazines and shell rooms, handling rooms, water tanks, spars, ring furniture, armory, dispensary, sick bay, pantries, lamp room, label nber irons, search lights, running lights, bell, coal scuttles, ash chutes, oil nging booms, steering gear, chronometer and compass lockers, miscella- fit, cleaning, planing decks, calking, docking and painting, increasing dder, miscellaneous work to complete contract of Pneumatic Gun Car- Power Company on board.

l 15, 1896, the *Terror* was reported as complete in all matters pertaining ction and repair, and was commissioned that date. After receiving her nce of stores and ammunition, she draws forward 12 feet 11 inches, aft 14 es, mean 13 feet 9 inches.

U. S. S. PURITAN.

mpleted before July 1, 1895.—Vertical keel, flat keel, stem, stern-post, rud- verse framing, longitudinals, flat keelson plate, inner bottom, outside perstructure deck beams, main-deck beams, berth-deck beams, half beams , skid beams, armor shelf, superstructure deck stringers and tie plates, armor plating, berth-deck stringers, berth-deck plating, gutters on super- deck, transverse bulkheads, coal-bunker bulkheads, wing-passage bulk- ft-alley bulkheads, stanchions, plank sheer, berth-deck plank, belt and king, deck lights, air ports, water tanks, mooring and towing bitts, steam nd bed, steering engine, forced draft in fire room.

Work done during the year.

Items.	Condition June 30, 1896.
ing	Completed.
ure deck plating and planking	Do.
ts	Do.
bes	Do.
rs	Do.
main deck	Do.
rer	Do.
ttings	Do.
s	Do.
	Do.
ocks	Do.
pp	Do.
beams	Do.
oms	Do.
an and winch	Do.
aratus	Do.
s	Do.
doors	Nine-tenths completed.
s	Five-tenths completed.
	Nine-tenths completed.
kheads for steam pipes	Do.
	Seven-tenths completed.
	Eight-tenths completed.
oms	Six-tenths completed.
n carriers	Five-tenths completed.
nition rooms	Eight-tenths completed.
	Completed.
	Seven-tenths completed.
ns	Completed.
	Nine-tenths completed.
olds, etc	Seven-tenths completed.
	Nine-tenths completed.
	Eight-tenths completed.
warrant officers' quarters	Nine-tenths completed.
m	Completed.
	Eight-tenths completed.
n office	Nine-tenths completed.
ice	Five-tenths completed.
fficer's office	Nine-tenths completed.
	Seven-tenths completed.
	Nine-tenths completed.
	Completed.
storerooms	Seven-tenths completed.
	Eight-tenths completed.
ts	Do.
	Do.
	Nine-tenths completed.

Work done during the year—Continued.

Items.	Condition June 30, 1896.
Crews' lavatory	Three-tenths completed.
Firemen's lavatory	Do.
Mess tables and benches	Do.
Lockers for crew	Two-tenths completed.
Hatch coamings and skylights	Eight-tenths completed.
Gratings and hatch covers	Five-tenths completed.
Rubbing plates	Nine-tenths completed.
Awning and life line stanchions	Eight tenths completed.
Guard rails and stanchions	Completed.
Reels	Eight tenths completed.
Search lights	Nine tenths completed.
Ship's bell	Eight-tenths completed.
Coal scuttles	Nine-tenths completed.
Chain stoppers	Do.
Military mast	Completed.
Hammock berthing	Nine-tenths completed.
Iron rungs and ladders	Six tenths completed.
Companion ladders	Two-tenths completed.
Ash chutes	Four-tenths completed.
Signal and ensign staffs	Eight-tenths completed.
Boats	Do.
Boat davits	Nine-tenths completed.
Boat booms	Completed.
Boat cradles	Do.
Speaking tubes	Eight-tenths completed.
Drainage and pumping	Nine-tenths completed.
Ventilation	Eight-tenths completed.
Ventilation in coal bunkers	Do.
Fresh air to coal bunkers	Completed.
Portable furniture	Nine-tenths completed.
Cooperage	Five-tenths completed.
Calking	Nine-tenths completed.
Cementing	Four-tenths completed.
Testing compartments	Eight-tenths completed.
Armory	Two-tenths completed.
Master-at-arms' locker	Do.
Chronometer and compass lockers	Not begun.
Signal lockers	Three-tenths completed.
Engineer's log room	Two-tenths completed.
Hatch cranes	Do.
Musket racks	Not begun.
Lumber irons	Do.
Running light boxes	Do.
Ring bolts in decks	Two-tenths completed.
Hammock hooks	Three-tenths completed.
Oil tanks	Not begun.
Hatch canopy frames	Do.
Ash gratings	Three-tenths completed.
Miscellaneous outfit	Four-tenths completed.
Heeling ship	Not done.
Calking	Five-tenths completed.
Painting	Six-tenths completed.

Draft of water July 1: Forward, 13 feet 3 inches; aft, 16 feet 11 inches; mean, 15 feet 1 inch.

At the present time the *Puritan* is 96 per cent completed. So far as the Department of Construction and Repair is concerned the *Puritan* will be ready for commissioning October 20, 1896.

U. S. S. ATLANTA.

The *Atlanta* was put out of commission September 28, 1895. She was surveyed November 26, 1895, which survey was approved June 15, 1896.

The following work has been completed to July 1: Graving decks, docking and painting bottom, preservation of hull, removal and repair of equipage, and work necessary for removal of battery.

No further work has been begun upon this vessel.

U. S. S. CHICAGO.

This vessel was put out of commission May 1, 1895. From that time until June 10, 1896, the following work was done: Graving decks, docking and painting bottom, *removing* bulkhead plates to get dynamo ashore, removing joiner work and tanks to *get battery* ashore, and repairs to equipage, and preservation.

he *Chicago* was surveyed June 27, 1895, which survey was approved April 3, 1896. rk was begun in accordance with survey June 10, 1896. To June 30 the following :k had been done:

Items.	Condition June 30.
ıoval of bulkheads and decks where necessary for removal of engines id boilers.	Completed.
ɔaration for plans	Begun.
ıdules and requisitions for steel material	Completed.
l room	Do.
ıporary electric wiring	Eight-tenths completed.

U. S. S. KATAHDIN.

'he ram *Katahdin* came to the yard October 4, 1895. Work was commenced on January 15, as follows: Equipage, cleaning, painting (as far as not completed by contractor), hammock numbers, spring clamps on W. T. doors, rifle racks, voice es, label plates, installation of battery, repairs to injured and imperfect parts, paration for officers and crew.

'he *Katahdin* was commissioned February 12, 1896, after which time the following rk was done on her: Building flying bridge, painting outside, building compass tform, repairs to steering gear, and new gangway platforms.

'n April 7 the *Katahdin* went on her official trial. She returned to this yard and rk was begun upon her, in accordance with approved report of inspection board, ıe 2, 1896. July 1, 1896, the work authorized was four-tenths completed.

TORPEDO BOAT ERICSSON.

'he *Ericsson* came to the yard June 19, 1896. Work was begun upon her June 20, ıpleting work not finished by contractors, as follows: Replacing and repairing ; and defective parts, overhauling pumps, etc., painting and equipage. July 1 ɜ work was seven-tenths completed.

'he following work was begun June 27, not chargeable to the contractors: tallation of battery and torpedo outfit; new hatch over engine room; stiffening ;ine-room bulkhead for pumps. On July 1 this work was one-tenth completed.

U. S. S. INDIANA.

ırrived at the navy-yard April 21, 1896; departed June 10, 1896. The following ns of work are completed: Voice pipes in 13-inch turrets, new gangways aft, after ıgways fitted forward, recalking main deck, repairs to stern-sounding platform, ra sounding boom from superstructure deck, fitting Compt. B–105 as issuing room crew's messes, weather cloth rail fitted to bridge, jackstays supplied for snatch cks, reel for cat fall, extra crutch for lower boom, extra cleats for guys; round l grab iron fitted in engine room, hatches, and coaling trunks; heavier caps fitted ventilating bitts; berth-deck scuppers removed; additional coaling door amid-ps on gun deck; supplying additional 33-foot steam launch and 28-foot cutter and viding stowage for same; sounding pipes to Compt. A–11, with additional drain-) to turret chambers, copper chutes supplied to utilize four 6-inch ammunition sts for ventilation; slight changes in transom in wardroom and new transom for ior officers; installing new sights in 13-inch turrets; repairs to 13-inch turret ons; building emergency cabin on bridge deck; new voice tube fitted from quarter k to pilot house and new voice tube from check compass and emergency cabin to ɔt house; new wire lockers in blower rooms for stowage of spare parts of battery; ɔ peep holes cut in conning tower; ensign staff hinged down; new trolley tracks 13-inch shell rooms; new signal yards supplied; new extra drainage pipes fitted B–98 and B–76; new foundations supplied for extra evaporators; new iron ladders ed to ship; additional electric lights were authorized by Bureau of Equipment; r voice tube from quarter-deck to engine room; portable ladders supplied; alter-ɔns in galley for baking outfit; alterations in stowage and handling of torpedoes; ıngcs in gun-cotton magazines; stowage of torpedo director boxes; overhauling ıpers and blowers.

The following items of work authorized on the *Indiana* are incomplete and in the condition stated below:

Items.	Condition.
New steam joint for boat cranes	Eight-tenths completed.
New locking bolts for 8-inch turret	Do.
New aprons for 13-inch turret	Four-tenths completed.
New battle hatch covers for seven hatches on quarter-deck	Two-tenths completed.
New hawse pipes	Three-tenths completed.
Additional water-tight flat in forehold	Not begun.
Extra 8-inch shell racks in passages	Do.
New steam ammunition hoist from 8-inch magazines	Do.

U. S. S. MASSACHUSETTS.

New hawse pipes have been ordered made similar to those for the *Indiana*, and the patterns have been completed and shipped to the steel casting company.

The following additional boats for the *Massachusetts* were ordered built at this station:

Type of boat.	Condition.
32-foot sailing launch	Seven-tenths completed.
28-foot cutter	Six-tenths completed.

GUNBOAT ANNAPOLIS.

The Bureau having directed by its letters No. 13260–95 to 13265–95 of February 14, 1896, that the equipage for Gunboat *Annapolis* be manufactured at this yard, sheaves and material for blocks have been required, drawings are in preparation for the spars and material required.

Type of boat.	Condition.
One 28-foot whaleboat gig	Seven-tenths completed.
One 26-foot whaleboat	Nine-tenths completed.

U. S. S. KEARSARGE.

A set of boats for the U. S. S. Kearsarge having been ordered built by the Bureau's letter No. 13885–95 of December 31, 1895, the following boats begun are in the condition reported:

Type of boat.	Condition.
32-foot sailing launch	Completed.
28-foot cutter	Eight-tenths completed.
30-foot whaleboat gig	One-tenth completed.
30-foot whaleboat	Six-tenths completed.
Do	One-tenth completed.
Steam cutter No. 218, 40-foot	Do.
Steam cutter No. 219, 33 foot	Six-tenths completed.

Tabular statement of repair work done during the year ending June 30, 1896.

Name of vessel.	Surveyed.	Survey approved.	Date work was ordered.	Date when work was begun.	Date completed.	Progress.
			1895.	1895.	1895.	
Essex			June 27	July —	July 26	
Cincinnati			July 7	July 7	Sept. 30	
Fern			July 6	.....	Aug. 16	
New York			July 20	July —	Sept. 21	
Montgomery			July 23	July —	Aug. 6	
					1896.	
Raleigh			July 30	July —	Aug. 8	
	1895.	1895.			1895.	
Columbia	Aug. 14	Aug. 15	Aug. 5	Aug. 5	Oct. 7	
Minnesota			Sept. 12	Sept. —	Oct. 21	
Narkeeta			Sept. 23	Sept. 23	Oct. 1	
Nina			...do	...do	Nov. 30	
Traffic			Oct. 2	Oct. —	Nov. 26	
New York			Nov. 7	Nov. —	Dec. 13	
			1896.	1896.	1896.	
Cincinnati			Jan. 21	Jan. 21	Feb. 21	
Columbia			Feb. 8	Feb. 8	Feb. 15	
Essex			Feb. 11	Feb. —	Mar. 12	
Newark			Apr. 30	Apr. 30	May 18	
Fern			May 6	May —	.....	Eight-tenths completed
Columbia			June 11	June —	.....	
	1896.	1896.				
New York	June 9	June 15	June 12	June —	.....	Four-tenths completed.
Cincinnati			June 15	June 15	June 20	
Newark			June 26	June 26	.....	Five-tenths completed.

Very respectfully,

FRANCIS T. BOWLES,
Naval Constructor, U. S. N.

The COMMANDANT,
Navy-Yard, New York.

UNITED STATES NAVY-YARD, *Norfolk, Va., July 14, 1896.*

SIR: In compliance with instructions from the Bureau of Construction and Repair, dated May 15, 1896, No. 800–A, I have the honor to report as follows concerning work done on the *Texas*, *Amphitrite*, and Tug No. 5, during the year ending June 30, 1896:

TEXAS.

Items completed on or before July 1, 1895.—Keel, stem and ram, sternpost, rudder, shaft tubes and struts, longitudinals, transverse frames, double reverse bars, water courses, outside plating, diagonal armor bulkhead framing, backing and armored redoubt framing, backing and armor, turrets, inner bottom, transverse bulkheads, coal bunker and fore and aft bulkheads, central passage below protective deck, central magazine and shell room for turret guns, hydraulic room, dynamo room, air compressing engine rooms, engine and boiler bearers, shaft bearers, bearers for fire-room flats, shaft alleys, water-tight doors, sluice valves, manholes, water-tight scuttles, sounding tubes, tests of water-tight compartments, deck beams, half beams and carlings, knees to beams and half beams, deck plating and stringers, hammock berthing, deck planking, hatch coamings and skylights, ladders to companion ways, etc.; mast and capstan partners, mast steps, stanchions in holds and between decks, gun ports, bilge keels, air ports, electric call bells, electric storeroom, armored ammunition tubes for turret guns, hydraulic engines, turret-turning engines, ammunition hoists, air compressors, draft of water figures, main magazines, small-arm magazines, machine-gun magazines, shell rooms and torpedo magazines, torpedo rooms, chain lockers, storerooms and fittings, bulkheads and fittings in officers' quarters, sick bay, ceiling between decks, ceiling in hold, storerooms, sail rooms, etc.; head and stern ornaments, ventilating arrangements, forced draft in fire-rooms, drainage and steam pumping arrangements, hand pumps, sluice valves, etc.; torpedo arrangements, passing scuttles for powder, torpedoes, shot, and shell; supports and fittings for guns, port lids and mantlets, shot-racks, arrangements for mounting and dismounting guns, cranes and hooks for armament, lockers and racks, steam-steering engine, binnacle supports, capstans, windlass and fittings, fair leads, wire-cable nippers and reels, anchor davits, cable bitts, hawse pipes and stern mooring pipes, bow stoppers and all anchor gear, deck pipes, boat-hoisting winches, masts, spars, and rigging; chain and preventer plates, shackles, eyebolts, etc.; ensign staff, jack staff, swinging booms, water tanks, guard rails and stanchions, towing and

warping bitts, scuppers, baths and water-closets, steward's pantries, dispensary, master-at-arms's locker, executive officers and navigator's offices, paymaster's office, sail room, lamp room, band instrument room, wire lockers, firemen's washrooms, warrant officers' mess room, furniture, mess, and clothes lockers, boat davits, crutches, and other fittings for boats, awning stanchions, accommodation ladders and sea-steps, ash chutes, coaling scuttles and ports, coal chutes between decks, warping pipes, signal lockers, sentry walk and stool for lead man, torpedo ports, life-buoys and fittings, fittings for running lights, zinc protectors, galleys and fittings, refrigerators and vegetable lockers, hammock hooks, watch bell, locks, keys, etc.; label plates, calking, heeling ship.

Work completed after July 1, 1895.—Side armor fitted in place, conning tower and shield, chart house and flying bridge, steering apparatus, electric lighting plant, voice pipes, cementing, painting boats.

The *Texas* went into commission August 15, 1895, and left the yard September 5, 1895. Draft of water forward, 21 feet 6½ inches; aft, 23 feet 4¾ inches.

Weights.

Department.	On board July 1, 1895.	Placed on board dur ing year.	On board Aug. 15, 1895.
	Pounds.	*Pounds.*	*Pounds.*
Construction and repair	6,895,540	209,043	7,104,583
Steam engineering	1,538,011	8,561	1,546,572
Ordnance	108,319	5,653	113,972
Equipment	2,879,011	14,547	2,893,558
Total	11,420,881	247,804	11,658,685

On January 4, 1896, the *Texas* returned to the yard. She went out of commission January 27, 1896, in order that certain desirable alterations and improvements in her construction might be carried out. The work was begun January 6, 1896, and has been in progress continuously since that date.

Items completed on or before July 1, 1896.—Bottom plating, longitudinals, bracket and floor plates, docking keels, communication around turret motors, turret locking bolts, ammunition trunks, ammunition hoist tubes, hatches in redoubt, ammunition scuttle in flying deck, additional armor bars, conning-tower support, 6-inch sponson shutters, battle covers to air ports, voice tubes, hand rail around turrets, ladder between conning tower and redoubt, air lock between the two forward fire rooms, air lock between the two after fire rooms, water-tight doors between forward and after fire rooms, protective covering over smoke-pipe casing, sliding doors to operate from both sides, overhauling steam windlass and steering engine, tank to receive discharge from fireman's wash room, shifting sand locker to forehold, drain pipes to crank pits, alterations in protective deck hatch ladders, heavier bower anchor cradles, new dingey davits, shifting swinging booms, drip pans under engine-room blowers, lifeboat davits, discharge from distillers, galley funnel and ventilator, oil tanks in dynamo rooms, shower baths for officers and for crew, wash basin for machinists, openings to turrets, hoods over scuppers, passage through patent fuel space forward, shortening ash hoists, removing battle covers, wardroom port shutters, new steam winches, extra clamps to water-tight doors, removing main rail stanchions and fitting life lines to awning stanchions, arranging bridge rail for chart board, removing two 6-inch ammunition hoists, overhead torpedo trolley track, water-tight doors in wing passages.

Condition of work July 1, 1895.

Items.	Percentage of completion.
Shifting hydraulic pumps to redoubt	80
Overhauling hydraulic turret turning gear	20
Openings in vertical clip rings of turrets	20
Fitting electric fans in redoubt	80
Changing ventilation system of engine room from exhaust to supply	80
Fitting ventilators over crew's water-closets	75
Conical voice pipe on top of pilot house	50
Grating and hatch battens to No. 2 hatch	5
Recalking decks	80
Minor repairs to joiner work	75
Painting and cementing	60
Inclining experiment	Not begun.

Ship will be ready for sea in all respects in matters coming under the Bureau of Construction and Repair by August 31, 1896.

AMPHITRITE.

The *Amphitrite* arrived at this yard in August, 1895, in order that the board of which Commodore T. O. Selfridge, U. S. N., was president, might inspect her and make recommendations and estimates for the improvement of the ventilation of her boiler and engine rooms and the reduction of the excessive temperatures in her living spaces. The work recommended by that board was authorized by the Bureau's letter No. 10867-95, dated September 9, 1895.

Work was begun at once and completed November 15, 1895, the vessel leaving the yard November 20, 1895.

STEAM TUG NO. 5.

Keel laid January 13, 1896.

Work was stopped on this vessel on February 8, 1896, on account of lack of funds. On June 13, 1896, work was resumed, additional money having become available by the passage of the naval appropriation bill.

Condition July 1, 1896.

Items.	Percentage of completion.
Keel, stem and stern post	100
Frames, reverse frames, and floor plates	80
Deck beams	30
Bulkheads	50
Rudder	50
Pilot house	40

This vessel will be ready for trial November 30, 1896, and ready for delivery to the navy-yard, League Island, Pa., on December 31, 1896.

In accordance with instructions of Bureau's letter, above referred to, I also submit the following statement of repair work done by this department during the year ending June 30, 1896:

Repair work during fiscal year 1896.

Name of vessel.	Date of survey.	Date of approval of survey.	Date when work was ordered.	Date when work was begun.	Date of completion of work.	Progress—Estimated date of completion.
Standish			Oct. 27, 1894	June 28, 1895		90 per cent; Aug. 31, 1896.
Ajax			May 31, 1895	Aug. 6, 1895	Sept. 20, 1895	
Canonicus			do	do	do	
Mahopac			June 3, 1895	Aug. 3, 1895	Aug. 17, 1895	
Manhattan			do	Aug. 24, 1895	Sept. 20, 1895	
Triton			June 20, 1895	June 25, 1895	Aug. 3, 1895	
Minneapolis	June 11, 1895	June 21, 1895		June 28, 1895	July 27, 1895	
Franklin			June 21, 1895	do	Aug. 31, 1895	
Catskill			July 10, 1895	July 11, 1895	Aug. 19, 1895	
Lehigh			do	do	do	
Franklin			Aug. 16, 1895	Aug. 17, 1895	Oct. 26, 1895	
Do			Oct. 22, 1895	Oct. 29, 1895	June 30, 1896	
Montgomery	Oct. 17, 1895	Oct. 26, 1895		Oct. 30, 1895	Dec. 24, 1895	
Raleigh	Nov. 5, 1895	Nov. 8, 1895		Nov. 9, 1895	Dec. 20, 1895	
Dolphin			Nov. 18, 1895	Nov. 23, 1895	Dec. 10, 1895	
Minneapolis			Nov. 20, 1895	Nov. 20, 1895	Nov. 26, 1895	
Bancroft			Dec. 8, 1895	Dec. 13, 1895	Jan. 15, 1896	
Monongahela	Jan. 6, 1896	Jan. 9, 1896		Jan. 10, 1896	Mar. 7, 1896	
Raleigh			Feb. 1, 1896	Feb. 1, 1896	Apr. 25, 1896	
Maine			Mar. 16, 1896	Mar. 25, 1896	May 29, 1896	
Dolphin			Apr. 11, 1896	Apr. 17, 1896	May 25, 1896	
Columbia			May 5, 1896	May 5, 1896	May 29, 1896	

Very respectfully,

A. W. STAHL,
Naval Constructor, U. S. N.

The COMMANDANT, NAVY-YARD, *Norfolk, Va.*

NAVY-YARD, MARE ISLAND, CAL., *July 1, 1896.*

SIR: In compliance with the letter of the Bureau of Construction and Repair, No. 800–A, dated May 15, 1896, I have the honor to submit the following:

(*a*) Description of work done on the U. S. S. *Monadnock* and on Tug No. 4, the *Unadilla*, from July 1, 1895, to the date of completion of each of these vessels.

(*b*) A tabular statement giving information as to the repair work done at this yard from July 1, 1895, to June 30, 1896, inclusive.

(*c*) The negatives and two prints of each of three views of the *Hartford* and *Unadilla* are forwarded herewith.

U. S. S. MONADNOCK.

Items completed on or before June 30, 1895.—All old work interfering with alterations torn out and all unnecessary openings resulting therefrom closed; main deck plating, berth deck plating and planking, fore and aft bulkheads, water-tight scuttles, chain lockers, stanchions, superstructure framing, deck beams, plating, stringers, tie plates and deck planking, half beams and ledges, skid beams, passing scuttles, plank sheer, wood backing, 4-inch gun beds, military mast, mast step, galley inclosure, mess tables and benches, hatch coamings, armored smoke pipe and gratings, coal scuttles, metal gratings for deck lights and coaling scuttles, water tanks, mooring bitts, towing bitts, warping chocks, iron rungs and ladders where required, hammock hooks, steam capstan, windlass and winch, windlass bed, water-tight compartments tested, sounding tubes, conning tower, gun supports, bridge and flying bridge, crew's mess chests, air ports, hawse pipes and billboards, draft marks, cementing manger and galley bed, belt armor, barbette armor, search-light platform, gratings for hammock berthing, steam cutter, awning and life-line stanchions, struts, guard-rail stanchions, cooperage, pilot house, transverse bulkheads, holes in bulkheads for pipe leads, working drawings, main deck plank, deck lights, anchor davit.

Work done during year.

Items.	Condition June 30, 1895.	Condition Feb 20, 1896.
Water tight doors	Nine-tenths completed	Completed.
Hammock berthing structure	Eight-tenths completed	Do.
Joiner work, storerooms	do	Do.
Joiner work, shell rooms	Four-tenths completed	Do.
Joiner work, magazines	do	Do
Joiner work, wardroom	Eight-tenths completed	Do
Joiner work, cabin	Nine-tenths completed	Do
Joiner work, lower wardroom	do	Do
Joiner work, warrant officers	do	Do
Joiner work, officers, etc	Three-tenths completed	Do.
Armory	Five-tenths completed	Do.
Signal lockers	Nine-tenths completed	Do.
Engineer's and ordnance workshop	Five-tenths completed	Do.
Pantries	Nine-tenths completed	Do.
Water-closets	Seven-tenths completed	Do.
Bathrooms	Four-tenths completed	Do.
Lower wardroom lavatory	Five-tenths completed	Do.
Crew's lavatory	Eight-tenths completed	Do.
Gratings and hatch covers	Seven-tenths completed	Do.
Brass label plates	Eight-tenths completed	Do.
Life buoy stands	Nine-tenths completed	Do.
Chain stoppers	Six-tenths completed	Do.
Ladders and companion ways	Nine-tenths completed	Do.
Miscellaneous eye and ring bolts	Six-tenths completed	Do.
Ash chutes	Eight-tenths completed	Do.
Oil tanks	Two-tenths completed	Do.
Canopies	Nine-tenths completed	Do.
Swinging booms	do	Do.
Signal and ensign staff	do	Do.
Boats	do	Do.
Boat davits, derricks, etc	do	Do.
Ventilation, coal bunkers	Seven-tenths completed	Do.
Firemen's wash room	do	Do.
Hatch coamings and skylights	Six-tenths completed	Do.
Steering gear	Nine-tenths completed	Do.
Voice pipes	do	Do.
Interior communication	Seven-tenths completed	Do.
Telegraphs	do	Do.
Drainage and pumping arrangements	Nine-tenths completed	Do.
Ventilation	do	Do.
Fresh air supply to bunkers	do	Do.
Fire alarms	Four-tenths completed	Do.
Portable furniture	Nine-tenths completed	Do.
Calking	Seven-tenths completed	Do.
Cementing double bottom	do	Do.
Painting	Five-tenths completed	Do.
Finished drawings	Two-tenths completed	Five-tenths completed.
Installation main battery	Not commenced	Nine-tenths completed.
Installation secondary battery	do	Completed.

1, 1895, the work of this department on this vessel was estimated to be 88 mpleted, based upon the vessel being ready for sea in all respects. The laced in commission February 20, 1896, and was then practically complete cts, except as regards the turret gun mounts, which were greatly delayed . The *Monadnock* proceeded to sea with the board of inspection March guns were successfully manipulated and fired, and May 16, 1896, the ship to sea, making her first cruise.

Weights.

Department.	Weights placed on board from July 1, 1895, to Feb. 20, 1896.	
	Tons.	*Lbs.*
and repair	197	752
ering	12	2,102
	16	186
	176	278
eight for year	402	1,318
iously added	1,872	729
eight since the completion of the vessel was undertaken	2,274	2,047

water February 20, 1896: Forward, 12 feet; aft, 13 feet 7 inches; mean, nches.

UNADILLA.

npleted on or before June 30, 1895.—Laying down keel, stem, stern frame, adrant, frames and intermediate frames set and erected.

Work done during year.

Items.	Condition June 30, 1896.	Condition Jan. 1, 1896.
	Six-tenths completed...	Completed.
ng	Four-tenths completed..	Do.
ulkheads	Nine-tenths completed..	Do.
bulkheads	Three-tenths completed.	Do.
ams and plating and stringers	Six-tenths completed...	Do.
eams and plating and stringers	....do	Do.
ng and boiler bearers	....do	Do.
doors	Three-tenths completed.	Do.
scuttles	Four-tenths completed..	Do.
	Five-tenths completed..	Do.
	Two-tenths completed..	Do.
	Six-tenths completed...	Do.
	Four-tenths completed..	Do.
	Not commenced.....	Do.
	....do	Do.
r	....do	Do.
ting	....do	Do.
s	....do	Do.
	....do	Do.
s	....do	Do.
s	....do	Do.
nks	....do	Do.
	....do	Do.
ank	....do	Do.
lank	....do	Do.
	....do	Do.
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ld	....do	Do.
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	....do	Do.
	....do	Do.
	....do	Do.
s	....do	Do.
chions	....do	Do.
	....do	Do.
ns	....do	Do.
cabin	....do	Do.
staterooms	....do	Do.
	....do	Do.
	....do	Do.
gratings	....do	Do.

Work done during year—Continued.

Items.	Condition June 30, 1896.	Condition Jan. 1, 1896.
Ridge pole	Not commenced	Completed.
Side ladder	do	Do.
Eagle on pilot house	do	Do.
Furniture	do	Do.
Joiner work, forecastle, pilot house, etc	do	Do.
Plumbing	do	Do.
Water-closet	do	Do.
Pantry, pumps, etc	do	Do.
Air ports	do	Do.
Water tank	do	Do.
Cement	do	Do.
Painting	do	Do.
Windlass	do	Do.
Steering arrangements	do	Do.
Speaking tubes	do	Do.
Guard rail and stanchions	do	Do.
Boats	do	Do.
Miscellaneous outfit, eye-bolts, chain plates, etc	do	Do.

The vessel was docked, painted, and inclined.

It is estimated that on June 30, 1895, the work of this department was 30 per cent completed, based upon the final completion ready for sea. At 3 p. m. on September 19, 1895, the tug was launched, and the vessel was fully completed and ready for service on January 1, 1896, the first keel plate having been laid April 29, 1895.

Very respectfully,

WM. J. BAXTER,
Naval Constructor, U. S. N.

The COMMANDANT, NAVY-YARD,
Mare Island, Cal.

Statement of vessels on which repair work was done at navy-yard, Mare Island, Cal., during the year ending June 30, 1896.

Name of vessel.	Date of survey.	Date of approval of survey.	Date when work was ordered.	Date when work was begun.	Date when work was completed.	Estimated date of completion.	Progress in this.
Adams	Aug. 1, 1895	Aug. 21 1895	Aug. 21, 1895	Aug. 21, 1895	Jan. 18, 1896		
Baltimore	Mar. 16, 1896	Apr. 6, 1896	Apr. 6, 1896	June 15, 1896		Mar. 15, 1897	0
Boston	Aug. 20, 1893	Dec. 2, 1893	Dec. 2, 1893	June 14, 1894	Jan. 2, 1896		
Bennington	Mar. 21, 1896	Apr. 6, 1896	Apr. 6, 1896	Apr. 18, 1896		July 20, 1896	8
Comanche	No survey.		Jan. 21, 1896	Jan. 25, 1896	Feb. 13, 1896		
Concord				Not begun.		Jan. 1, 1897	
Hartford	Aug. 11, 1893	Sept. 15, 1893	Sept. 15, 1893	Dec. 17, 1894		Jan. 1, 1898	5
Independence.	No survey.		Jan. 30, 1896	Jan. 30, 1896	Feb. 13, 1896		
Marion			Sept. 7, 1895	Sept. 9, 1895	Oct. 4, 1895		
Mohican	Oct. 7, 1895	Oct. 31, 1895	Oct. 31, 1895	Mar. 14, 1896		Dec. 15, 1896	1
Monadnock			Mar. 28, 1890		May 16, 1896		
Monterey	No survey.		Sept. 10, 1895	Sept. 14, 1895	Jan. 14, 1895		
Olympia			June 14, 1895	July 27, 1895	Aug. 14, 1895		
Petrel	June 8, 1896	June 19, 1896	June 19, 1896	June 29, 1896		Nov. 1, 1896	
Philadelphia.	July 31. 1895	Aug. 9, 1895	Aug. 9, 1895	July 29, 1895	Sept. 14, 1895		
Ranger	Feb. 17, 1896	May 9, 1896	May 9, 1896	June 20, 1896		Jan. 1, 1897	
Thetis	May 23. 1895	June 4, 1895	July 1, 1895	July 6, 1895		Aug. 1, 1897	7

UNITED STATES NAVY-YARD, *Boston, July 7, 1896.*

SIR: Referring to Bureau of Construction and Repair letter No. 800–A, dated May 25, 1896, requesting a report on each vessel upon which repair work was done during the present fiscal year, would say:

No repair work under cognizance of the above bureau was done by this department during the fiscal year ending June 30, 1896.

Very respectfully,

H. W. LYON,
Commander, U. S. N., Head of Department of Construction and Repair.

The COMMANDANT.

NAVY-YARD, PORTSMOUTH, N. H., *July 13, 1896.*

In compliance with the order of the Bureau of Construction and Repair, No. 800–A, dated May 15, 1896, the following special report is submitted, showing each vessel upon which work was done during the fiscal year ending June 30, 1896:

Name of vessel.	Date of survey.	Date of approval of survey.	Date when work was ordered.	Date when work was begun.	Date of completion of work.	Remarks.
Fern.....	Oct. 7, 1895	Oct. 12, 1895	Oct. 12, 1895	Nov. 20, 1895	Apr. 14, 1896	The order, Bureau of Construction and Repair, of Oct. 12, 1895, No. 11678–95, directs that work will be commenced on the Fern when the vessel arrives at the yard. (She arrived Nov. 16, 1895.)
Leyden..	Aug. 9, 1893	Sept. 5, 1893	Mar. 13, 1894	Apr. 10, 1894	About Aug. 15, 1896, nine-tenths completed.	Work to be done to complete the Leyden: Winch to be set. Boom and fittings to make, forecastle deck to complete. Engineer's storeroom and lockers to complete. Gratings and awning stanchions to complete. Hawse reels to be fitted in place. Ship to be docked, cleaned and painted.

Respectfully submitted.

WILLIAM F. NOYES,
Master Shipwright in charge.

The COMMANDANT.

OFFICE OF SUPERINTENDING CONSTRUCTOR FOR U. S. NAVY,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 14, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter, No. 801–A, of May 15, 1896, I have the honor to submit the following report of the work executed in connection with the construction of battle ship No. 5, *Kearsarge*, to June 30, 1896, inclusive.

A detailed statement of the work done on this vessel up to that date is given below, but it may be stated generally that on June 30, 1896, the work of laying the keels had begun, and work upon the vessel was progressing in a satisfactory manner. While the amount of work done is such as to render it impossible to make a final estimate as to the time of completion of this vessel, I am of the opinion that it will be possible to have the contractors' trial in the latter part of 1898, and that the vessel can be completed by January, 1899, in accordance with the contract.

Photographs showing the condition of the vessel at the present time have been taken, and will be forwarded as soon as they are received from the photographer.

The percentage of work completed, based on the vessel fitted out ready for sea, is estimated to be 2 per cent on July 1, 1896.

The following is the list of such work as has been begun on this vessel up to the 1st instant:

The lines of the vessel have been laid down on the mold-loft floor and completely faired.

Frame molds are nearly completed and the mold of the stern casting is well under way.

The keel blocks have been laid and the building slip prepared for beginning work.

The inner and outer flat keel plates are fitted and assembled on the blocks.

The vertical keel is being laid off.

The vertical keel angles have been laid off and holes punched and countersunk.

About 30 per cent of the frame angles have been furnaced, bent to shape, and punched.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR FOR U. S. NAVY,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 14, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter No. 801-A, of May 15, 1896, I have the honor to submit the following report of the work executed in connection with the construction of the battle ship No. 6, *Kentucky*, to June 30, 1896, inclusive:

A detailed statement of the work done on this vessel up to that date is given below, but it may be stated generally that on June 30, 1896, the work of laying the keels had begun and work upon the vessel was progressing in a satisfactory manner. While the amount of work done is such as to render it impossible to make a final estimate as to the time of completion of this vessel, I am of the opinion that it will be possible to have the contractors' trial in the latter part of 1898, and that the vessel can be completed by January, 1899, in accordance with the contract.

Photographs showing the condition of the vessel at the present time have been taken and will be forwarded as soon as they are received from the photographer.

The percentage of work completed, based on the vessel fitted out ready for sea, is estimated to be 2 per cent on July 1, 1896.

The following is the list of such work as has been begun on this vessel, up to the 1st instant:

The lines of the vessel have been laid down on the mold-loft floor and completely faired.

Frame molds are nearly completed, and the mold of the stern casting is well under way.

The keel blocks have been laid and the building slip prepared for beginning work.

The inner and outer flat keel plates have been fitted and are being assembled on blocks.

The vertical keel is being laid off.

The vertical keel angles have been laid off, and holes punched and countersunk.

About 30 per cent of the frame angles have been furnaced, bent to shape, and punched.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 14, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter No. 801-A of May 15, 1896, I have the honor to submit the following report of the work executed in connection with the construction of light-draft protected gunboat No. 9, *Helena*, from July 1, 1895, to June 30, 1896, inclusive:

A detailed statement of the work done on this vessel during the period in question is given below, but it may be stated generally that on July 1, 1895, the greater part of the structural work of the hull was completed and the vessel being prepared for launching. On January 30, 1896, the vessel was successfully launched, and since that time work upon the hull has progressed continuously but slowly on account of the impossibility of laying the decks or completing the woodwork that was required to be fireproofed according to the Department's instructions.

The delay, due to the adoption of the fireproofing process, has been of such a serious character that, in order to place all the facts at the disposal of the Department, I have requested the contractors to furnish me with a statement as to the causes of delay in the completion of the vessel due to the adoption of this process, a copy of which (letter of the Newport News Shipbuilding and Dry Dock Company, No. 1008, of the 10th instant) is hereto attached. It will be noticed that since

vember 9, 1895, the date of approval of the fireproofing process for certain parts the woodwork of this vessel, the Newport News Shipbuilding and Dry Dock Company states that there have been repeated delays on the part of the Electric Fireofing Company in fulfilling their original promises as to the time of performing s work, and that when they endeavored to expedite the work by establishing a ant of their own, the cylinder furnished by the fireproofing company was so fective that it could not be used. At the present time a portion of the material be used on this vessel is still in New York undergoing treatment.

From such information as I have been able to obtain, there appears to be considable difficulty in working the fireproofed material with machine woodworking ols, and still further delay will occur from that cause when working this material er that necessary for untreated lumber of an amount which it will only be posle to determine after actual experience. In my opinion, the Newport News Shipilding and Dry Dock Company have made every effort to finish the fireproofing material as quickly as possible; but there will be still further delays, due to the ficulty in working the fireproofed material, as just stated.

In view of the above facts, I am of the opinion that it will not be possible to have e contractors' speed trial before January 1, 1897, and estimate that the vessel will t be ready for service before March 1, 1897.

Photographs showing the condition of the vessel at the present time have been ken and will be forwarded as soon as received from the photographer.

The following is a detailed statement of the work done upon this vessel during the riod reported upon. The percentage of work completed, based on the vessel fitted t ready for sea, is estimated to be 83 per cent on July 1, 1896.

A struts for sternpost are completed and riveted.
Shaft struts are completed and riveted.
Shaft hangers are completed and riveted.
Fair-water sleeves at ends of shaft tubes are completed and riveted.
Both rudders and rudder stocks are completed.
Carrier girders of rudder stocks are completed.
Rudder stock stuffing boxes are completed and secured in place.
Outside plating is completed and riveted.
Doubling plates are completed and riveted.
Deck stringers, deck and tie plates are completed and riveted.
Half-round molding abreast upper and main decks is completed and riveted.
Bridge deck stanchions are 50 per cent completed.
Main deck waterway staples are completed.
All transverse bulkheads above and below berth deck are completed and riveted.
Longitudinal bulkheads of passage between boiler rooms are completed and riveted.
Hatters on upper and main decks are completed.
Magazine bulkheads are completed and riveted.
Magazine light boxes are completed and riveted.
Insulating material between forward boiler rooms and magazines is fitted in place.
Framing and plating of chart and pilot house are completed and riveted.
Metal shutters to chart and pilot house are completed and riveted.
Military mast and conning tower are stepped and 87 per cent completed and eted.
Metal shutters to conning tower are completed and secured in place.
Wood topmast and signal yard are completed, but not stepped.
Hatch coamings on upper deck are completed and riveted.
Hatch and skylight coamings on main deck are completed and riveted.
Hatch frames and coamings on berth deck are completed and riveted.
Engine and fire room hatch casings and hatch trunks are completed and riveted.
Wood and metal skylight covers are completed.
Wooden booby hatch is completed.
Flooding arrangement of trimming tanks is 95 per cent completed.
Flooding arrangement of magazines is 90 per cent completed.
Main drain is 95 per cent completed.
Secondary drain is 90 per cent completed.
Heads of the fire main are laid off in ship, and holes are being cut in bulkheads, cks, and casings.
Deck pump forward (main deck) is on board and ready to be fitted.
Force pump, forward side, bulkhead No. 24 (main deck) is fitted in place.
Force pump, sick-bay bath room, is fitted in place.
Fresh-water system is 45 per cent completed.
Salt-water system is 50 per cent completed.
Ventilation system is 5 per cent completed.
Fresh-air downcasts in engine and boiler hatch casings are being fitted.
Wood foundation for steering engine is completed, and steering engine is secured place.

Tiller, tiller crossheads, side rods, spare tiller, slides, brake, etc., have been secured in place and are being finally lined up.
Hardover stops for the tiller are completed and riveted.
Chain-locker bulkheads are completed and riveted.
Chain-locker fittings are completed and secured in place.
Engine and boiler bearers are completed, but not riveted.
Deck stanchions are 97 per cent in ship.
Drillings for the fastenings of the upper and main deck plank is completed.
Drilling for the fastenings of the berth-deck plank is 95 per cent completed.
Side ladders are 75 per cent completed.
Sea steps are completed and 70 per cent riveted in ship.
Corrugated bulkheads have been assembled in sections and ready to be put on board.
Metal bulkheading of dispensary and refrigerating room is completed and riveted.
Metal bulkheading of prison and lamp room is completed.
Stateroom, berth, and locker fronts are completed, but not assembled on board.
Stateroom furniture is 90 per cent completed.
Water-closets (crew's) are on board and ready to be secured in place.
Water-closet (sick-bay bathroom) is on board and ready to be secured in place.
Dynamo foundations are completed and riveted.
Armored gun sponsons are completed and riveted.
Work on water-tight hinged doors is 90 per cent completed.
Work on vertical and horizontal sliding water-tight doors is 60 per cent completed.
Coaling ports are completed.
Coaling chutes are completed and riveted.
Coaling scuttles are completed and ready to go on board.
Ash chutes are completed.
Scuppers are 95 per cent completed.
Work on air ports is 95 per cent completed.
Work on dead lights in doors is 95 per cent completed.
Work on dead lights in casings is 75 per cent completed.
Escape scuttles are completed and riveted.
Anchor cranes are 85 per cent completed.
Anchor beds are completed and riveted.
Windlass beds are completed and riveted.
Metal foundation for nippers is completed and riveted.
Windlass foundation is completed and riveted.
Windlass is on board, but not yet assembled.
Capstan is on board, but not secured in place.
Deck pipes are completed and riveted.
Hawse pipes are completed and riveted.
Warping and towing bitts are on board, but not secured in place.
Warping chocks are on board, but not yet secured in place.
Steel wire cable nippers have been received.
Work on boats is progressing; one steam launch, one 33-foot sailing launch, two 28-foot cutters, one 29-foot whaleboat, one 29-foot gig whaleboat, and one 18-foot dinghy are planked and being fitted out. Work on balsa is 30 per cent completed.
Boat davit and boat-davit bearings are 70 per cent completed.
Steam-winch foundation for boats is completed and riveted.
Guard rails and stanchions are 90 per cent completed.
Sounding tubes are 30 per cent completed.
Hatch cranes are 70 per cent completed.
Awning stanchions are 85 per cent completed.
Cooperage is 98 per cent completed.
Sponson water tanks (main deck) are completed.
Chain plates are completed.
Bow chocks are completed, but not riveted.
Stern chocks are completed and riveted.
Eyebolts in frames have been fitted where directed.
Mooring staples are 50 per cent completed and riveted.
Swinging and propeller booms are completed, but not secured in place.
Ladders to hatchways are 60 per cent completed.
Iron rounds (escapes from coal bunkers and boiler rooms) are 60 per cent completed.
Swinging mess tables and benches for crew are completed.
Bow stoppers have been received, but are not secured in place.
Asphaltum cement in ship and completed.
Ammunition hoists are 25 per cent completed and holes cut in deck plating for these hoists.
Ammunition hoist winches are 30 per cent completed.
Work on bow ornament is 5 per cent completed.

'esting water-tight compartments is completed.
)eck chests, mess chests, and boat boxes are completed.
ıbout 125,000 feet of lumber, treated by the electric fireproofing process, have
)n received at this yard, and are being subjected to treatment in the dry kiln.
Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 10, 1896.

DEAR SIR: Your communication of the 7th instant, No. 1549, relative to the date completion of gunboat No. 9, *Helena*, and when in our opinion this vessel will be ıdy for the speed trial, duly received.

In connection therewith, we beg to inform you that the completion of this boat has en very seriously interfered with by the delays we have been subject to in having 'tain material treated with the electric fireproofing process.

)n August 5, 1895, we received your communication No. 998, requesting us to fur-h an estimate for fireproofing certain woodwork on this vessel, and we were able to furnish you with the desired information until October 24, the intervening ıe having been consumed in endeavoring to get some definite time for the treat-nt of this material from the Electric Fireproofing Company, owing as they stated the incomplete condition of their plant at that time

)n November 9 we received your communication No. 1125, with copy of letter from) Bureau of Construction and Repair, approving our proposition to apply this ocess to such woodwork as called for in Bureau's letter of August 15, 1895.

It that time the Electric Fireproofing Company requested ninety days to perform s work, but later on they informed us that it would probably be the 1st of Feb-ıry before they could commence operations on same, and with a desire to expedite work, we proposed putting in a plant of our own, at considerable expense, and h this object in view purchased a large cylinder from the Electric Fireproofing npany, which, upon arrival at our works, we found so defective that it necessi-ed considerable repairs before it could be used, and this, in connection with other ays we found we could be subject to in the erection of the proper buildings, etc., the treatment of this material, compelled us to fall back on the promises of the ctric Fireproofing Company, as we found it would be considerably after the 1st February before we could get our plant in working operation.

'e at once took up the subject of transportation of this material from here to r York, but it was on the 13th of February before we finally succeeded in securing ssel, and loading same for destination.

n April 24 about 175,000 feet of this material was returned treated, and on May re received another cargo, making about 375,000 feet in all, and there is still a ntity at the works of the Electric Fireproofing Company undergoing treatment.

he Electric Fireproofing Company instructed us to have this material air-dried ıbout sixty days before putting it in our kiln, and acting on these instructions ıad about 175,000 feet put up on sticks in the kiln, out of the weather, and air-d for about five weeks, with a good draft of air through the kiln.

ıe drying kiln was started June 5 at temperature of 100° for three days, and next three days at 110°, and from the 12th of June to the present time we have running 120° temperature.

ıe 1-inch and 1¼-inch white pine, 1-inch mahogany, and 2-inch ash is dry; the 1¼- and 2-inch white pine will be dry in a few days, and the decking in the kiln we k will be dry in about ten days or two weeks, after which we will have about 00 additional feet to dry.

ıis material arrived here perfectly water-soaked, and we find it will take just t three times the length of time to dry and work it in our tools as required by ordinary kiln-dried lumber.

e are pushing the work ahead as rapidly as possible under the circumstances, we expect to have this vessel ready for her speed trial as called for in the speci-ions about the 1st of January, 1897, and ready to leave here for service about st of February, 1897, although we will do our utmost to anticipate this time as ı as possible.

Yours, very truly,

SOMERS N. SMITH,
General Superintendent.

J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

OFFICE OF SUPERINTENDING CONSTRUCTOR FOR U. S. NAVY,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 14, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter, No. 801-A, of May 15, 1896, I have the honor to submit the following report of the work executed in connection with the construction of light-draft protected gunboat No. 8, *Wilmington*, from July 1, 1895, to June 30, 1896, inclusive:

A detailed statement of the work done on this vessel during the period in question is given below, but it may be stated generally that on July 1, 1895, the greater part of the structural work of the hull was completed and the vessel being prepared for launching. On October 19, 1895, the vessel was successfully launched, and since that time work upon the hull has progressed continuously but slowly, on account of the impossibility of laying the decks or completing the woodwork that was required to be fireproofed according to the Department's instructions.

The delay, due to the adoption of the fireproofing process, has been of such a serious character that, in order to place all the facts at the disposal of the Department, I have requested the contractors to furnish me with a statement as to the causes of delay in the completion of the vessel due to the adoption of this process, a copy of which (letter of the Newport News Shipbuilding and Dry Dock Company, No. 1007, of the 10th instant) is hereto attached. It will be noticed that since November 9, 1895, the date of approval of the fireproofing process for certain parts of the woodwork of this vessel, the Newport News Shipbuilding and Dry Dock Company states that there have been repeated delays on the part of the Electric Fireproofing Company in fulfilling their original promises as to the time of performing this work; and that when they endeavored to expedite the work by establishing a plant of their own, the cylinder furnished by the fireproofing company was so defective that it could not be used. At the present time a portion of the material to be used on this vessel is still in New York undergoing treatment.

From such information as I have been able to obtain there appears to be considerable difficulty in working the fireproofed material with machine wood-working tools, and still further delay will occur from that cause when working this material, over that necessary for untreated lumber, of an amount which it will only be possible to determine after actual experience. In my opinion, the Newport News Shipbuilding and Dry Dock Company has made every effort to finish the fireproofing of material as quickly as possible, but there will be still further delays, due to the difficulty in working the fireproofed material, as just stated.

In view of the above facts, I am of the opinion that it will not be possible to have the contractors' speed trial before January 1, 1897, and estimate that the vessel will not be ready for service before March 1, 1897.

Photographs showing the condition of the vessel at the present time have been taken and will be forwarded as soon as received from the photographer.

The following is a detailed statement of the work done upon this vessel during the period reported upon. The percentage of work completed, based on the vessel fitted out ready for sea, is estimated to be 83 per cent on July 1, 1896.

A-struts for stern post are completed and riveted.
Shaft struts are completed and riveted.
Forward, intermediate, and after stern posts are completed.
Deck stringers, deck and tie plates are completed and riveted.
Shaft tubes and castings at ends of tubes are completed.
Shaft hangers are completed and riveted.
Fair-water sleeves at ends of shaft tubes are completed and riveted.
Rudder and rudder stock are completed and secured in place.
Carrier girders of rudders are completed.
Rudder-stock stuffing boxes are completed and secured in place.
Half-round molding abreast upper and main decks completed and riveted.
Outside plating is completed and riveted.
All doubling plates are completed and riveted.
Side armor is completed and riveted.
Main-deck waterway staples are completed.
Gutters on upper and main decks are completed.
All transverse bulkheads above and below berth decks are completed and riveted.
Longitudinal bulkheads of passage between boiler rooms are completed and riveted.
Bridge deck stanchions are 50 per cent completed.
Magazine bulkheads are completed and riveted.
Magazine light boxes are completed and riveted.
Insulating material between forward boiler rooms and magazines fitted in place.
Framing and plating of chart and pilot house are completed and riveted.
Metal shutters to chart and pilot house are 10 per cent completed.
Military mast and conning tower are stepped and 87 per cent completed and riveted.

Metal shutters to conning tower are completed and secured in place.
Wood topmast and signal yard are completed, but not stepped.
Hatch coamings on upper deck are completed and riveted.
Hatch and skylight coamings on main deck are completed and riveted.
Hatch frames and coamings on berth deck are completed and riveted.
Wood and metal skylight covers are completed.
Wooden booby hatch is completed.
Engine and fire room hatch casings are completed and riveted.
Flooding arrangement of trimming tanks is 95 per cent completed.
Flooding arrangement of magazines is 90 per cent completed.
Main drain is 95 per cent completed.
Secondary drain is 90 per cent completed.
Berth-deck connections to manifolds are 70 per cent completed and being secured place.
Leads of fire main are laid off in ship, and holes are being cut in bulkheads, decks d casings.
Deck pump forward (main deck) is on board and ready to be fitted.
Force pump, forward side, bulkhead 24 (main deck), fitted in place.
Force pump, sick-bay bathroom, fitted in place.
Fresh-water system is 45 per cent completed.
Salt-water system is 50 per cent completed.
Leads of ventilation system are laid off in ship, and holes are being cut in decks, lkheads, and casings.
Fresh-air downcasts in engine and boiler hatch casings are being fitted.
Wood foundation for steering engine is completed, and steering engine secured in ace.
Tiller, tiller crossheads, side rods, spare tiller, slides, brake, etc., have been secured place and are being finally lined up.
Hard-over stops for the tiller are completed and riveted.
Chain-locker fittings are completed and secured in place.
Deck stanchions are 97 per cent in ship.
Drilling for the fastenings of the upper and main deck plank is completed.
Drilling for the fastenings of the berth-deck plank is 95 per cent completed.
Main deck plank as far as aft bulkhead No. 36 has been laid and secured in place.
Side ladders are 75 per cent completed.
Sea steps are completed and 70 per cent riveted in ship.
Corrugated bulkheads have been assembled in sections and ready to be put on ard.
Metal bulkheading of dispensary and refrigerating room is completed and riveted.
Metal bulkheading of prison and lamp room is completed.
Stateroom berth fronts and locker fronts are completed, but not assembled on ard.
Stateroom furniture is 90 per cent completed.
Water-closets (crews') are on board and ready to be secured in place.
Water-closet (sick bay) is on board and ready to be secured in place.
Dynamo foundations are completed and riveted.
Armored gun sponsons are completed and riveted.
Water-tight hinged doors are 90 per cent completed.
Work on vertical and horizontal sliding water-tight doors is 50 per cent completed.
Coaling ports are completed.
Coaling chutes are completed and riveted.
Coaling scuttles are completed and ready to go on board.
Scuppers are 95 per cent completed.
Ash chutes are completed.
Work on air ports is 95 per cent completed.
Work on deadlights in doors is 95 per cent completed.
Work on deadlights in casings is 75 per cent completed.
Escape scuttles are completed and riveted.
Anchor cranes are 85 per cent completed.
Anchor beds are completed and riveted.
Metal foundation for nippers is completed and riveted.
Windlass foundation is completed and riveted.
Windlass is on board and assembled, and secured in place.
Capstan is on board, but not secured in place.
Deck pipes are completed and riveted.
Hawse pipes are completed and riveted.
Warping and towing bitts are on board, but not secured in place.
Bow and warping chocks are on board, but not secured in place.
Steel-wire cable nippers have been received.
Work on boats is progressing; one steam launch, one 33-foot sailing launch, two

28-foot cutters, one 29-foot whaleboat, one 29-foot gig whaleboat, and one 18-foot dinghy are planked and being fitted out. Work on balsa is 30 per cent completed.
Swinging and propeller booms are completed, but not secured in place.
Boat davits and boat-davit bearings are 70 per cent completed.
Steam-winch foundation (for boats) is completed and riveted.
Guard rails and stanchions are 90 per cent completed.
Stern chocks are completed and riveted.
Hatch cranes are 70 per cent completed.
Awning stanchions are 85 per cent completed.
Sponson water tanks (main deck) are completed and fitted.
Cooperage is 98 per cent completed.
Chain plates are completed.
Sounding tubes are 30 per cent completed.
Eyebolts in frames have been fitted where directed.
Mooring staples are 50 per cent completed and riveted.
Metal ladders to hatchways are 60 per cent completed.
Iron rounds (escapes from coal bunkers and boiler room) are 60 per cent completed.
Swinging mess tables and benches for crew are completed.
Bow stoppers are received, but not secured in place.
Asphaltum cement in ship and complete.
Ammunition hoists are 25 per cent completed and holes cut in deck plating for these hoists.
Ammunition hoist winches are 30 per cent completed.
Work on bow ornament is 50 per cent completed.
Testing water-tight compartments is completed.
Deck chests, mess chests, and boat boxes are completed.
About 125,000 feet of lumber, treated by the electric fire-proofing process, has been received at this yard and is being subjected to treatment in the dry kiln.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 10, 1896.

DEAR SIR: Your communication of the 7th instant, No. 1549, relative to the date of completion of gunboat No. 8, *Wilmington*, and when, in our opinion, this vessel will be ready for the speed trial, duly received.

In connection therewith, we beg to inform you that the completion of this boat has been very seriously interfered with by the delays we have been subjected to in havng certain material treated with the electric fireproofing process.

On August 5, 1895, we received your communication No. 998, requesting us to furnish an estimate for fireproofing certain woodwork on this vessel, and we were unable to furnish you with the desired information until October 24, the intervening time having been consumed in endeavoring to get some definite time for the treatment of this material from the Electric Fireproofing Company, owing, as they stated, to the incomplete condition of their plant at that time.

On November 9 we received your communication No. 1124, with copy of letter from the Bureau of Construction and Repair, approving our proposition to apply this process to such woodwork as called for in Bureau's letter of August 15, 1895.

At that time the Electric Fireproofing Company requested ninety days to perform this work, but later on they informed us that it would probably be the 1st of February before they could commence operations on the same, and, with a desire to expedite the work, we proposed putting in a plant of our own, at considerable expense, and with this object in view purchased a large cylinder from the Electric Fireproofing Company, which, upon arrival at our works, we found so defective that it necessitated considerable repairs before it could be used, and this, in connection with other delays we found we would be subject to in the erection of the proper building, etc., for the treatment of this material, compelled us to fall back on the promises of the Electric Fireproofing Company, as we found it would be considerably after the 1st of February before we could get our plant in working operation.

We at once took up the subject of transportation of this material from here to New York, but it was on the 13th of February before we finally succeeded in securing a vessel and loading same for destination.

On April 24 about 175,000 feet of this material was returned treated, and on May 26 we received another cargo, making about 375,000 feet in all, and there is still a quantity at the works of the Electric Fireproofing Company undergoing treatment.

The Electric Fireproofing Company instructed us to have this material air dried for about sixty days before putting it in our kiln, and acting on these instructions we had about 175,000 feet put on sticks in the kiln out of the weather and air dried for about 5 weeks with a good draft of air through the kiln.

The drying kiln was started June 5 at a temperature of 100° for three days, and the next three days at 110°, and from the 12th of June to the present time we have been running 120° temperature.

The 1-inch and 1¼-inch white pine, 1-inch mahogany, and 2-inch ash is dry; the 1¼-inch and 2-inch white pine will be dry in a few days, and the decking in the kiln we think will be dry in about ten days or two weeks, after which we will have about 200,000 additional feet to dry.

This material arrived here perfectly water-soaked, and we find it will take just about three times the length of time to dry and work it in our tools as required by the ordinary kiln-dried lumber.

We are pushing the work ahead as rapidly as possible under the circumstances, as we expect to have this vessel ready for her speed trial as called for in the specifications, about the 1st of January, 1897, and ready to leave here for service about the 1st of February, 1897, although we will do our utmost to anticipate this time as much as possible.

Yours, very truly,

SOMMERS N. SMITH,
General Superintendent.

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

OFFICE OF SUPERINTENDING CONSTRUCTOR,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 14, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter No. 801-A, of May 15, 1896, I have the honor to submit the following report of the work executed in connection with the construction of light-draft protected gunboat No. 7, *Nashville*, from July 1, 1895, to June 30, 1896, inclusive:

A detailed statement of the work done on this vessel during the period in question is given below, but it may be stated generally that on July 1, 1895, the greater part of the structural work of the hull was completed and the vessel being prepared for launching. On October 19, 1895, the vessel was successfully launched and since that time work upon the hull has progressed continuously but slowly, on account of the impossibility of laying the decks or completing the woodwork that was required to be fireproofed according to the Department's instructions.

The delay, due to the adoption of the fireproofing process, has been of such a serious character that, in order to place all the facts at the disposal of the Department, I have requested the contractors to furnish me with a statement as to the causes of delay in the completion of the vessel due to the adoption of this process, a copy of which (letter of the Newport News Shipbuilding and Dry Dock Company, No. 1006, of the 10th instant) is hereto attached. It will be noticed that since November 9, 1895, the date of approval of the fireproofing process for certain parts of the woodwork of this vessel, the Newport News Shipbuilding and Dry Dock Company states that there have been repeated delays on the part of the Electric Fireproofing Company in fulfilling their original promises as to the time of performing this work, and that when they endeavored to expedite the work by establishing a plant of their own, the cylinder furnished by the fireproofing company was so defective that it could not be used. At the present time a portion of the material to be used on this vessel is still in New York undergoing treatment.

From such information as I have been able to obtain, there appears to be considerable difficulty in working the fireproofing material with machine woodworking tools, and still further delay will occur from that cause when working this material over that necessary for untreated lumber of an amount which it will only be possible to determine after actual experience. In my opinion the Newport News Shipbuilding and Dry Dock Company have made every effort to finish the fireproofing of material as quickly as possible, but there will be still further delays due to the difficulty in working the fireproofed material, as just stated.

In view of the above facts I am of the opinion that it will not be possible to have the contractors' speed trial before January 1, 1897, and estimate that the vessel will not be ready for service before March 1, 1897.

Photographs showing the condition of the vessel at the present time have been taken and will be forwarded as soon as received from the photographer.

The following is a detailed statement of the work done upon this vessel during

the period reported upon. The percentage of work completed, based on the vessel fitted out ready for sea, is estimated to be 83 per cent on July 1, 1896.

Rudder and rudder stock are completed and fitted.
Outside plating is in place and riveted.
Transverse framing in general is completed and riveted.
Wood frame for bridge is 95 per cent completed.
Skid beams for boats are completed and riveted.
Main deck waterway staples are completed and riveted.
Deck stringer, deck and tie plates are riveted.
Berth deck plating aft is riveted.
Berth deck stringer bars and staples aft are completed and riveted.
Tiller flat is riveted.
Upper deck hatch and skylight coamings are completed and riveted.
Main deck hatch and skylight coamings are completed and riveted.
Berth and water-tight deck hatch frames and coamings are completed and riveted.
Engine hatch casing is riveted.
Forward and after boiler hatch casings and hatch trunks are completed and riveted.
All transverse bulkheads above and below water-tight deck are riveted.
Gutters on main deck and upper deck are completed and riveted.
Wood skylight covers are 95 per cent completed.
Magazine light boxes are completed and secured in place.
Dynamo room bulkheads are completed and riveted.
Dynamo foundation is completed and riveted.
Shaft tubes and casings at ends of tubes are completed and secured in place.
Fair-water sleeve is completed and secured in place.
Shaft struts are completed and secured in place.
Boiler and engine bearers are completed and riveted.
Bilge keels are completed and riveted.
Chain locker bulkheads are completed and riveted.
Chain locker fittings are completed and secured in place.
Bow chocks are fitted and ready to be secured in place.
Mast partners are completed and riveted.
Steel lower masts are completed and stopped.
Fittings for steel lower masts are completed.
Armored gun sponsons are completed and riveted.
Sponsons for 4-inch guns on upper deck are completed and riveted.
Drilling for the fastenings of the upper, main, and berth deck planking is completed.
Deck in wake of windlass foundation has been laid.
Corrugated bulkheads have been assembled in sections and ready to go on board.
Stateroom furniture is 90 per cent completed.
Stateroom berth fronts and locker fronts are completed.
Chart house is 75 per cent completed, but not yet assembled on board.
Flooding arrangement of trimming tanks is 95 per cent completed.
Flooding arrangement of magazines is 90 per cent completed.
Main drain is 95 per cent completed.
Secondary drain is 90 per cent completed.
Leads of fire main are laid off in ship and holes are being cut through bulkheads, decks, and casings.
Fore and aft deck pumps (main deck) are on board ready to be fitted.
Force pump just forward of bulkhead No. 31, port side, main deck, is fitted in place.
Force pump, after side of bulkhead No. 82, berth deck, is fitted in place.
Fresh-water system is 65 per cent completed.
Salt-water system is 75 per cent completed.
Leads of ventilation system are laid off in ship and holes are being cut in bulkheads, deck, and casings.
Fresh-air downcasts in engine and boiler casings are being fitted.
Steering-engine foundation has been completed and the engine secured in place.
The rudder, rudder stock, tiller, compound tiller, pivot, transverse slide, and fair leaders of the steering gear are being finally lined up.
Fitting for storing spare tiller is completed.
Stanchions are 97 per cent in ship.
Work on air ports is 95 per cent completed.
Work on dead lights in doors is 90 per cent completed.
Work on dead lights in casings is 80 per cent completed.
Scuppers are 95 per cent completed.
Ammunition hoists are 15 per cent completed and holes in deck plating for these hoists are being cut.
Ammunition hoist winches are 25 per cent completed.
Work on water-tight hinged doors is 90 per cent completed.
Work on vertical and horizontal sliding water-tight doors is 60 per cent completed.

Windlass bed is completed and riveted.
Windlass is assembled and secured in place.
Metal nipper foundations are completed and riveted.
Chain pipes are completed and riveted.
Hawse pipes are completed and riveted.
Anchor beds are completed and riveted.
Anchor cranes are on board and being assembled.
Foundation of steam winch (for boats) is completed and riveted.
Coaling trunks are completed.
Ash chutes are completed.
Awning stanchions are 90 per cent completed.
Warping chocks and towing bitts have been received but not secured in place.
Work on boats is progressing; one steam launch, one 30-foot cutter, two 28-foot cutters, one 29-foot whaleboat, one gig whaleboat, and one 18-foot dingey have been framed and planked, and are being fitted out. Work on the balsa has commenced.
Boat davit gear and cradle in connection with skid beams are 40 per cent completed.
Boat davit bearings for quarter boats are on board and being fitted.
Mooring staples are being fitted to ship.
Guard rails and stanchions are 90 per cent completed.
Chain plates are completed and riveted.
Forgings for attachment of rigging and rigging screws are 90 per cent completed.
Swinging tables and benches for crews completed and riveted.
Sounding tubes are 20 per cent completed.
Cooperage is 98 per cent completed.
Cementing in inner bottom is completed.
Port shutters and fittings for torpedo tubes are 67 per cent completed.
Side ladders are 75 per cent completed.
Sea steps are completed and riveted in place.
Ladders to hatchways are 60 per cent completed.
Iron rounds (escapes from coal bunkers and boiler room) fitted and riveted in place.
Swinging and propeller booms are completed, but not secured in place.
Work on the head ornament has commenced.
Hatch cranes are 65 per cent completed.
Eyebolts in beams have been fitted where directed.
About 125,000 feet of lumber, treated by the electric fireproofing process, have been received at this yard, and are being subjected to treatment in the dry kiln.
Deck chests, mess chests, and boat boxes are completed.
Testing of water-tight compartments is completed.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 10, 1896.

DEAR SIR: Your communication of the 7th instant, No. 1549, relative to the date of completion of gunboat No. 7, *Nashville*, and when in our opinion this vessel will be ready for the speed trial, duly received.

In connection therewith we beg to inform you that the completion of this boat has been very seriously interfered with by the delays we have been subjected to in having certain material treated with the electric fireproofing process.

On August 5, 1895, we received your communication No. 998, requesting us to furnish an estimate for fireproofing certain woodwork in this vessel, and we were unable to furnish you with the desired information until October 24, the intervening time having been consumed in endeavoring to get some definite time for the treatment of this material from the Electric Fireproofing Company, owing, as they stated, to the incomplete condition of their plant at that time.

On November 9 we received your communication No. 1123, with copy of letter from the Bureau of Construction and Repair, approving our proposition to apply this process to such woodwork as called for in Bureau's letter of August 15, 1895.

At that time the Electric Fireproofing Company requested ninety days to perform this work, but later on they informed us that it would probably be the 1st of February before they could commence operations on same, and with a desire to expedite the work, we proposed putting in a plant of our own, at considerable expense, and with this object in view purchased a large cylinder from the Electric

Fireproofing Company, which, upon arrival at our works, we found so defective that it necessitated considerable repairs before it could be used, and this, in connection with other delays we found we would be subject to in the erection of the proper buildings, etc., for the treatment of this material, compelled us to fall back on the promises of the Electric Fireproofing Company, as we found it would be considerably after the 1st of February before we could get our plant in working operation.

We at once took up the subject of transportation of this material from here to New York, but it was on the 13th of February before we finally succeeded in securing a vessel and loading same for destination.

On April 24 about 175,000 feet of this material was returned treated, and on May 26 we received another cargo, making about 375,000 feet in all, and there is still a quantity at the works of the Electric Fireproofing Company undergoing treatment.

The Electric Fireproofing Company instructed us to have this material air dried for about sixty days before putting it in our kiln, and acting on these instructions we had about 175,000 feet put up on sticks in the kiln, out of the weather, and air dried for about five weeks, with a good draft of air through the kiln.

The drying kiln was started June 5 at a temperature of 100° for three days, and the next three days at 110°, and from the 12th of June to the present time we have been running 120° temperature.

The 1-inch and 1½-inch white pine, 1-inch mahogany, and 2-inch ash is dry; the 1½-inch and 2-inch white pine will be dry in a few days, and the decking in the kiln we think will be dry in about ten days or two weeks, after which we will have about 200,000 additional feet to dry.

This material arrived here perfectly water soaked, and we find it will take just about three times the length of time to dry and work it in our tools as required by the ordinary kiln-dried lumber.

We are pushing the work ahead as rapidly as possible under the circumstances, and we expect to have this vessel ready for her speed trial, as called for in the specifications, about the 1st of January, 1897, and ready to leave here for service about the 1st of February, 1897, although we will do our utmost to anticipate this time as much as possible.

Yours, very truly,

SOMMERS N. SMITH,
General Superintendent.

MR. J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

OFFICE OF SUPERINTENDING CONSTRUCTOR,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 16, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter, No. 801-A, of May 15, 1896, I have the honor to forward herewith by express one package containing the negatives of gunboats Nos. 7, 8, and 9, *Nashville*, *Wilmington*, and *Helena*, and under separate cover photographs of these vessels.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

THE CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 16, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter, No. 801-A, of May 15, 1896, I have the honor to forward herewith, under separate cover, one view each of battle ships Nos. 5 and 6, *Kearsarge* and *Kentucky*.

In view of the slight amount of work that has been done on these vessels only one view of each has been taken. The other two views will be taken in a short time unless otherwise directed by the Bureau.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

THE CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR FOR U. S. NAVY,
WM. CRAMP & SONS' SHIP AND ENGINE BUILDING WORKS,
Philadelphia, July 1, 1896.

: In compliance with the instructions contained in the Bureau's letter, No. , of May 15 last, I have the honor to submit herewith a special report describe work done on each vessel under my superintendence from July 1, 1895, to 30, 1896, inclusive, as follows:

U. S. S. INDIANA.

s vessel was launched February 28, 1893; had preliminary contractor's trial March 6 to 9, 1894; left Cramps' shipyard on October 12, 1895, for official trial e Maine coast (the trial taking place October 18), and returned to Cramps' ship- October 20, 1895. The ship finally left for League Island on November 13, 1895, ent into commission November 20, 1895.

July 1, 1895, it was estimated that 97 per cent of the hull work, based on the l fitted out ready for sea, was completed.

e work done upon this vessel during the past year has been as follows:

e water-tight doors were given a final overhauling, rubber washers for dogs , and doors made perfectly water-tight

e few remaining bolts to secure side armor were received and fitted, and red was forced behind side and casemate armor.

e 13-inch guns and mounts were received and installed, and the installation of -inch guns and mounts completed.

e armor for 13-inch turrets was fitted and secured.

e topmast was completed and hoisted into place, and all fittings in and on top art house completed.

e fittings in torpedo rooms were completed, brackets for torpedoes, trolley tracks, screens, and director bar supports completed.

e fittings for galleys were completed, hammock berthing and hammock hooks leted, and all fittings in quarters begun and completed.

e fitting of flash plates was completed, linoleum laid where called for, wire ng laid and floors cemented where required, and all deck planking overhauled, d, and recalked.

e joiner work was completed in the sail and awning room, auxiliary magazines, nce storeroom, electrical storeroom, and captain's office, and the changes in r work in 6-inch and 6-pounder magazines was completed.

e sick bay and dispensary were completed, search-light and control stands and lard compass platforms completed, and the work on fresh and salt water sys- completed.

tings in lamp room and "paints and oils room" completed, bag racks, ditty-box , rifle racks, mess lockers, marines' hat and coat lockers, metal ladders, stern s, and miscellaneous fittings about ship made and fitted.

painting, cementing, and cleaning was thoroughly done.

U. S. S. MASSACHUSETTS.

is vessel was launched June 10, 1893, went on builders' preliminary trial from h 17 to 21, 1896, left Cramps' shipyard for official trial off the main coast April 896 (the trial taking place April 25), and returning to Cramps' shipyard April 896.

e ship finally left for League Island June 10, 1896, and went into commission ame day.

July 1, 1895, the work done on the hull, based on the vessel fitted out ready a, was estimated at 92 per cent.

e work done upon the vessel from July 1, 1895, to July 1, 1896, was as follows:

the remaining side armor plates (9) were received and fitted, and red lead was d behind side and casemate armor.

e 13-inch turret was put in place and the armor for the two 13-inch turrets ved, fitted, and secured; also armor for three 8-inch turrets was fitted and ed.

e guns and mounts for the two 13-inch turrets and the four 8-inch turrets were ved and installed, and the installation of all turret-turning gear completed.

e torpedo fittings to hull were completed, all brackets and wire screens for tor- es put up, trolley tracks and fittings completed.

e alteration of bulkheads in officers' quarters was advanced from five-tenths to letion, and all fittings in quarters completed, and work on sick bay and dis- ary completed.

e shutters for 6-inch and 6-pounder gun sponsons were completed, topmast ved and fitted, all boats received, boat chocks fitted, and boats secured.

The softening of Harveyized surface of armor was done where necessary.

All the cofferdams were packed with cellulose.

The deck planking was overhauled, planed, and re-calked, linoleum and wire matting laid on decks where called for, and all cementing and tiling of floors done where necessary.

The canopies to hatches were advanced from five-tenths to completion, awning and rail stanchions fitted on ship, hatch covers and gratings completed, awning ridge poles and stanchions completed, jack and flag staffs fitted, flash plates on main deck completed, metal and wood ladders to companionways and wood ladders to magazines fitted; and all detail work, such as fitting hammock hooks, securing mess tables and mess chests, making and fitting mess lockers, hat and clothes lockers for marines, bag racks, ditty-box racks, rifle racks, hose and wire reels, completed.

The ventilation system was overhauled, drainage system completed, and alterations in fresh and salt water systems made.

The control stands and platform for standard compass were completed, and chart house begun and completed.

Fittings in lamp and oil rooms completed.

The joiner work was completed, or begun and completed, in sail and awning room, engineer's workshop, ordnance and electrical storerooms, ordnance workshop, captain's office, navigator's office, paymaster's office, executive officer's office, armory, and in wardroom and junior officers' pantries.

Stowage of sheet and stern anchors completed.

All outfit, title B, received and put on board, and all painting, cementing, and cleaning completed.

U. S. S. BROOKLYN.

The first keel plate of this vessel was laid August 2, 1893, and on July 1, 1895, the hull work, based on the vessel fitted out ready for sea, was estimated to be 54 per cent completed, the present estimated percentage being 87. This vessel was launched October 2, 1895, and had her preliminary trial from May 9 to 12, 1896.

I estimate that this vessel will be ready for final trial in September, and for delivery to the Government about one month later.

The progress on the vessel during the past year has been as follows:

The plating on berth, gun, and main decks was completed, outside plating in wake of shaft tubes and struts and above protective deck completed, rudder completed, beams in wake of 8-inch turrets completed; all longitudinal bulkheads completed; transverse bulkheads advanced from seven-tenths to completion; hatches and hatch coamings advanced from seven-tenths to completion; cofferdam bulkheads advanced from six-tenths to completion, and work of securing gun sponsons advanced from seven-tenths to completion.

The water-tight doors have been completed, hammock berthing, gutters in decks, coaling scuttles, coaling chutes and air ports completed; all deck planking laid and calked; the remaining side armor plates fitted and secured; the windlass foundation completed, windlass fitted; and the testing of compartments for water-tightness completed.

Hatch covers and gratings were completed, gratings to waterways fitted, skylights fitted, armor gratings and covers to openings in protective deck completed, turret foundations and supports completed, ash chutes (fixed and portable), coaling chutes, and scuppers completed, and all chocks, bitts, riding bitts, hawse and deck pipes, and other fittings for handling anchor chains completed. Bower anchor crane completed, and fitting of sheet anchor crane well under way; all boat davits except those for waist boats were completed, boat cranes nearly completed in shop, two winches and steering gear installed, and work of fitting turret-turning gear begun.

The fresh-water tanks were built and tested, and fresh and salt water system nearly completed throughout ship; fire main completed; drainage and ventilation system nearly completed; sounding pipes, air-escape pipes, etc., nearly completed.

The officers' and petty officers' shower baths, water-closets, and lavatories were completed; firemen's and machinists' washrooms and shower baths completed; crew's wash basins and shower baths, water-closets, and urinals fitted; all light divisional bulkheads fitted, and work on fittings in quarters nearly completed.

The barbettes for 8-inch guns were completed, the turrets and turning tubes built, all tracks, rollers, etc., received, and work of fitting well advanced; shutters for 6-pounder and 5-inch guns well advanced, and installation of 6-pounder gun mounts begun.

The chain lockers were completed, ammunition hoists begun, torpedo fittings to hull begun, masts and topmasts fitted, conning tower secured, bridge and chart house built, and boats built but not received.

The joiner work is under way in the general and other storerooms, pantries, and hold.

The metal ladders to hatchways are being fitted, swinging tables and benches made
a shop, and hammock hooks fitted.
Refrigerating rooms and plant about seven-tenths completed, galleys and galley
ads completed, rail stanchions and heels for awning stanchions fitted, canopies for
atches being fitted; head ornaments, mooring staples, watch bell, and some other
etails fitted.
The packing of cofferdams with cellulose is well advanced.
Painting and cementing was done where required.

U. S. S. IOWA.

The first keel plate of this vessel was laid August 5, 1893, the estimated percentage
hull work done July 1, 1895, was 40 per cent, the present percentage being 66 per
nt. This vessel was launched March 28, 1896, and, in my opinion, will be ready
r final trial about March or April, 1897, and for delivery to the Government about
ie month later.
The progress on this vessel during the past year has been as follows:
The riveting in stem, sternpost and stern frame was completed; rudder, transverse
ming, beams, and outside plating completed; the deck plating advanced from
ght-tenths to completion, longitudinal bulkheads below protective deck completed
d those above protective deck advanced from five-tenths to completion; transverse
ılkheads below protective deck advanced from eight-tenths to nine-tenths, and
ose above protective deck to nine-tenths, while the framing behind diagonal
doubt armor has been completed.
The work of fitting the backing for side armor and for barbette has been com-
eted, except shaping 8-inch barbette backing for armor. All of the side armor,
cept the shutter plates, has been fitted and is being secured; diagonal armor fitted
d secured, six plates on forward 12-inch barbette fitted, and redoubt armor all
ted, except the plates adjoining armor on 12-inch barbettes. The work on 8 and
inch barbette framing and supports has been completed and the barbettes nearly
mpleted; 8-inch turrets nearly completed in shop and 12-inch turrets begun.
The fitting of water-tight doors has been advanced to about seven-tenths comple-
on, the hatch coamings advanced to seven-tenths, torpedo fittings to hull begun,
ammock berthing advanced to three-tenths of completion, and coaling chutes, scut-
s, ash chutes, and scuppers begun.
The chain lockers are nearly completed, fresh-water tanks built, tested, and hoisted
to place but not secured; trimming tanks completed, except a few pipes, and metal
ork on shell rooms and magazines completed.
The gun sponsons were completed except shutters, shaft tubes and struts com-
eted, anchor and windlass beds completed, manhole scuttles completed, windlass
ted, and installation of steering gear begun.
The laying of deck planking is well advanced on the upper and main decks.
The capstans are being fitted, the hawse and chain pipes are completed, and the
ling bitts, towing bitts, and controllers are being fitted.
The drainage system has been advanced to four-tenths of completion, and the
ntilation is under way in the shop. The boats are nearly completed, but not
ceived.
The painting and cementing has been done where necessary, and the testing of
ater-tight compartments is well advanced.
Photographic views of each vessel, taken in accordance with Bureau's directions,
ill be forwarded as soon as received.

Very respectfully,

J. H. LINNARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF NAVAL CONSTRUCTOR,
SUPERINTENDING HULLS OF VESSELS FOR UNITED STATES NAVY,
Union Iron Works, San Francisco, Cal., July 1, 1896.

SIR: In accordance with the instructions contained in the Bureau's letter of May
, 1896, No. 801–A, I have the honor to submit the following report showing the
ork done on gunboat *Wheeling* from April 11, 1896, the date of laying the keel, to
ne 30, 1896:
Lines faired.
Scrive boards: Prepared.

Material ordered, almost all received, work of fireproofing wood material commenced.
Drawings: Working drawings submitted for approval from time to time.
Flat keel: Completed.
Vertical keel: Completed.
Stem: Both pieces in place, but scarf not yet riveted.
Sternpost in place.
Manganese bronze chocks for struts: Completed in shop except planing scarf.
Rudder: Bronze frame cast and machined.
Transverse frames: All frames bent and in place except staples under strut supports. Floor plates in place and riveted.
Flat keelson plates: In place and riveted.
Longitudinals: First longitudinals completed, except between frames 25 and 36 forward and between frames 73 and 80 aft. Second longitudinals erected and partly riveted. Extra longitudinals under engines completed. Third longitudinals, intercostal plates, and angles in place and riveted; flat longitudinal plates in place.
Panting stringer: Completed, except slight riveting.
Breast hook: In place and partly riveted.
Deck beams: Main-deck beams in place; gun-deck beams in place; berth-deck beams in place.
Deck stringers and plating: All deck stringers being laid off in shop; gun-deck and berth-deck stringers partly in place.
Hatch coamings and skylights: Metal coamings 60 per cent completed in shop.
Transverse bulkheads: Bulkheads 9, 14, 20, 28, 36, 73, and 81 erected in place and riveted; bulkheads 39, 84, 88, 95, and 105 erected in place and partly riveted.
Coal bunker and other fore and aft bulkheads: Upper staples for coal bunker and magazine bulkheads 60 per cent completed in shop.
Outside plating: Plating for bottom of water tanks from frame 36 to frame 73 laid off and partly fitted in place.
Inner bottom: Plating in place and partly riveted as far as second longitudinal on each side.
Manhole scuttles: Manhole coamings 80 per cent completed.
Air ports: Frames 10 per cent completed in shop.
Water-tight doors: Doors and frames 50 per cent completed in shop.
In my opinion this vessel is 20 per cent completed on the basis that 100 per cent completion represents her condition when ready for sea in all matters coming under the cognizance of the Bureau of Construction and Repair.
If there are no unforeseen delays this vessel will, in my opinion, be ready for the official trial trip by February 1, 1897, and for delivery to the Government by February 26, 1897.
Photographic views taken in accordance with the Bureau's instructions will be forwarded as soon as completed.

Very respectfully,

W. L. CAPPS,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF NAVAL CONSTRUCTOR, UNION IRON WORKS,
San Francisco, July 1, 1896.

SIR: In accordance with the instructions contained in the Bureau's letter No. 801-A, of May 15, 1896, I have the honor to submit the following report showing the work done on gunboat *Marietta* from April 13, 1896, the date of laying the keel, to June 30, 1896:
Lines faired.
Scrive-boards: Prepared.
Material ordered: Almost all received; work of fireproofing wood material commenced.
Drawings: Working drawings submitted for approval from time to time.
Flat keel: Completed.
Vertical keel: Completed.
Stem: Both pieces in place, but scarf not yet riveted.
Sternpost in place.
Manganese bronze chocks for struts: Completed in shop except planing scarfs.
Rudder: Bronze frame cast and machined.
Transverse frames: All frames bent and in place except staples under strut supports. Floor plates in place and riveted.
Flat keelson plates: In place and riveted.

Longitudinals: First longitudinal completed except between frames 25 and 36 forard, and between frames 73 and 80 aft. Second longitudinals erected and partly veted. Extra longitudinals under engines completed. Third longitudinals, intercstal plates, and angles in place and partly riveted; flat longitudinal plates partly i place.

Panting stringers: Completed, except slight riveting.

Breast-hook: In place and partly riveted.

Deck-beams: Main-deck beams in place; gun-deck beams in place; berth-deck eams in place.

Deck-stringers and plating: All deck-stringers being laid off in shop; gun-deck id berth-deck stringers partly in place.

Hatch coamings and skylights: Metal coamings 60 per cent completed in shop.

Transverse bulkheads: Bulkheads 9, 14, 20, 28, 36, 73, and 81 erected in place and veted; bulkheads 39, 84, 88, 95, and 105 erected in place and partly riveted.

Coal-bunker and other fore and aft bulkheads: Upper staples for coal-bunker and agazine bulkheads 60 per cent completed in shop.

Outside plating: Plating for bottom of water tanks from frame 36 to frame 73 laid f and partly fitted in place.

Inner bottom: Plating fitted in place and partly riveted as far as first longitudinal i each side.

Manhole scuttles: Manhole coamings 80 per cent completed in shop.

Air ports: Frames 10 per cent completed in shop.

Water-tight doors: Doors and frames 50 per cent completed in shop.

In my opinion, this vessel is 20 per cent completed on the basis that 100 per cent ompletion represents her condition when ready for sea in all matters coming under ie cognizance of the Bureau of Construction and Repair.

If there are no unforeseen delays, this vessel will, in my opinion, be ready for the fficial trial trip by February 1, 1897, and for delivery to the Government by Februry 26, 1897.

Photographic views taken in accordance with the Bureau's instructions will be rwarded as soon as completed.

Very respectfully,

W. L. CAPPS,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF NAVAL CONSTRUCTOR, UNION IRON WORKS,
San Francisco, Cal., July 2, 1896.

SIR: In accordance with the instructions contained in Bureau's letter No. 801–A, ated May 15, 1896, I have the honor to submit the following report of work done n the U. S. S. *Oregon* from July 1, 1895, to June 30, 1896.

In order to show fully the progress of work during the year a statement showing ie condition of work on July 1, 1895, is first given, being followed by a similar atement for June 30, 1896.

CONDITION OF WORK ON JULY 1, 1895.

The keel was laid on November 19, 1891, the vessel was launched on October 26, 1893, nd on July 1, 1895, the following items were completed:

Flat keel, vertical keel, stem, sternpost, stern frame, rudder, transverse frames, at keelson plates, inner bottom, longitudinals, transverse bulkheads, ammunition assages, deck beams, shaft struts, bridge beams, skid beams for boats, plank-sheers waterways, armor gratings in protective deck, gutters on deck, passing scuttles, offerdams, steering arrangements, boat cranes, chart house, chain lockers, water nks, trimming tanks, wood floor in coal bunkers, water courses, etc., engineer's orkshop, engineer's storerooms, hammock berthing, coaling scuttles, coaling chutes, gine, boiler, and shaft bearers, refrigerating room and ice machine room, scuppers, ilitary mast and tops, steam winches, windlass, capstan, deck pipes, hawse pipes, ern pipes, pumps, 1-pounder gun protection, feed tanks, forced draft in fire rooms, aming behind belt armor, framing behind diagonal armor, conning tower, shield and ibe, mast steps and foundations, armory, canopies to hatches, life buoys, hatch cranes, mber irons, bow chocks, warping or towing bitts, warping chocks, anchor davits, nchor beds, cable bitts, bow stoppers, anchor gear, shaft tubes, shaft struts, watch ell, awning stanchions, mooring staples, ensign and signal staffs, head and stern rnaments, manhole scuttles, sounding tubes, testing water-tight compartments, nks, etc.

Outside plating: Completed except 8 plates that were removed in fitting belt armor and which require to be calked and tap riveted to armor.
Water-tight doors: Completed except in after 13-inch B. L. R. handling room.
Deck planking: All planking laid and preliminary calking completed.
Deck coating: Nothing done.
Gratings and hatch covers: Gratings in chain lockers completed; gratings in coal and passing scuttles completed; gratings in engine, distilling room, boiler and fan hatches completed; storm covers to companion hatches on main deck completed; wood covers and gratings 50 per cent completed.
Lifting gear for hatch covers: Hydraulic gear in place; levers to be adjusted; eye-bolts, etc., 90 per cent completed.
Supply of ammunition: Tracks for 13-inch ammunition completed; tracks for 8-inch ammunition 98 per cent completed.
Magazines: Light boxes completed; ammunition saddles 90 per cent completed in shops; woodwork 75 per cent completed.
Shell rooms: Light boxes completed; woodwork 60 per cent completed.
Fixed ammunition rooms: Light boxes completed; woodwork 60 per cent completed.
Ready service magazines: Light boxes completed.
Torpedo manipulating rooms: Brackets 90 per completed; overhead trolley tracks 15 per cent completed.
Torpedo fittings on hull: Bow and stern tubes, shutters, and gear completed; broadside shutters and gear completed; castings in place; hull work for bow and stern launching tubes completed.
Hatch coamings, skylights, and inclosures: Coamings completed; skylights 98 per cent completed; inclosures completed.
Bulkheads and fittings in officers' quarters: Metal work 90 per cent completed; joiner work 80 per cent completed in shop and 40 per cent completed on ship; authorized new metal bulkheads 50 per cent completed.
Prisons, etc.: Bulkheads and doors, completed.
Firemen's washroom: Bulkheads completed; fittings 98 per cent completed.
Crew's water-closets: Completed except slight work in connection with urinals; tiling to be laid.
Crew's lavatory: Inclosure completed; fittings 90 per cent completed.
Air ports: 95 per cent completed on ship.
Deck lights: 98 per cent completed on ship.
Ceiling in hold, storerooms, etc.: Metal ceiling on berth deck removed; ceiling in hold completed.
Sail and awning room: 75 per cent completed.
Ordnance workshop: Nothing done.
Engineer's log room: 25 per cent completed.
Ash chutes: 95 per cent completed; to be secured in place after belt armor is fitted.
Lamp room: Inclosure completed.
Oil tanks: 90 per cent completed.
Drainage and pumping: Completed in double bottom; 98 per cent completed above double bottom.
6 inch gun sponsons: Completed except shutters; shutters 95 per cent completed.
6-pounder gun sponsons: Completed except shutters; shutters 75 per cent completed.
Ventilation: Casings and fans completed; pipes and valves 97 per cent completed, cowl ventilation 97 per cent completed.
Ventilation of coal bunkers: 99 per cent completed.
Fresh and salt water service: 98 per cent completed.
Armor plating: All completed except belt armor, 13-inch B. L. R. barbette armor, and 13 and 8 inch B. L. R. turret armor; 8 plates belt armor, port side, in place; 3 plates on starboard side in place; 13-inch barbette armor in place, work of securing, 70 per cent completed.
Backing behind armor: Completed except for 13-inch B. L. R. turret.
13-inch B. L. R. turrets: Barbettes completed except securing armor; turret shells completed in shops; live rings completed in shops; roller paths completed in shops.
8-inch B. L. R. turrets: Barbettes, completed; turret shells, completed; armored ammunition tubes, completed; live rings, roller paths, turning tubes, in place. Armor for one turret, in place.
Torpedo net booms: Nothing done.
Galley: Metal work of inclosure and coal bins completed. Equipment 98 per cent installed. Joiner work 60 per cent completed.
General and other storerooms: 92 per cent completed.
Officers' lavatories: 60 per cent completed.
Officers' water-closets: 15 per cent completed.
Captain's office: 15 per cent completed.
Executive officers' office: Bulkheads erected; joiner work 20 per cent completed.

Navigator's office: Bulkheads erected; joiner work 20 per cent completed.
Paymaster's office; 15 per cent completed.
Sick bay: Inclosure completed; joiner work 15 per cent completed.
Dispensary: Inclosure completed; joiner work 20 per cent completed.
Pantries: Bulkheads erected; joiner work 5 per cent completed.
Ladders to hatchways, etc.: 85 per cent completed.
Iron rounds or ladders: 96 per cent completed.
Carpenter's workshop: 25 per cent completed.
Brass rubbing plates, etc.: Nothing done.
Label plates: 77 per cent completed.
Jacob's ladders: Nothing done.
Running lights: Nothing done.
Swinging booms: Completed in shops.
Swinging tables and benches for crew: Nothing done.
Reels: Nothing done.
Chronometer and compass locker: Nothing done.
Master-at-arms inclosure: Nothing done.
Signal lockers: Nothing done.
Ladders (side), sea steps, etc.: Side ladders 95 per cent completed in place; sea steps, completed.
Gangway boards: Teak pieces trimmed to shape.
Guard rails and stanchions: Completed on main, superstructure, and bridge decks and on chart house and on boat-crane platforms.
Shot racks and rifle racks: Nothing done.
Attachment for rigging, plates, bolts, etc.: Nothing done.
Boat davits and cradles: Davits completed; cradles completed except being fastened.
Foundations for guns: Completed for 6-inch B. L. R. and for 6-pounders on bridge deck and on hammock berthing; platform gratings for 6-pounders on hammock berthing 85 per cent completed.
Lashing bolts and shackles for securing guns: Nothing done.
Chocks for fair leaders: Nothing done.
Hammock hooks: Nothing done.
Eyebolts in beams: 75 per cent completed.
Cleaning and painting steel or iron work: Work being kept painted; cork painting 65 per cent completed.
Mess and clothes lockers for crew: Nothing done.
Painting, graining, and polishing: Work being kept painted.
Dynamo room and electrical storerooms: Dynamo foundations completed; 3 dynamos in place; storeroom bulkheads erected.
Voice pipes or telephones, call bells, etc.: 86 per cent completed.
Ringbolts in deck: 60 per cent completed.
Portable furniture: 75 per cent completed in shop.
Cooperage: 95 per cent completed.
Miscellaneous outfit: Nothing done.
Boats: Steam launch and steam cutter completed, except steering gear; 4 cutters 95 per cent completed; 2 dinghys 80 per cent completed; 2 whaleboats 25 per cent completed; sailing launch 25 per cent completed; whaleboat gig 90 per cent completed.
Upholstering: Nothing done.
Casings to pipes, valve rods, etc.: 45 per cent completed.
Sentries' walk and stools for leadsmen: Leadsmen stools completed; sentries' walk 90 per cent completed.
Stowage for spare coal bags: Nothing done.
Flash plates: Nothing done.
Cement or other coatings in double bottom and elsewhere: 95 per cent completed.

CONDITION OF VESSEL ON JUNE 30, 1896.

Ship completed in accordance with contract, specifications, and authorized changes, with the exception of the following items:

BRIDGE DECK AND ABOVE.

Pins in awning stanchion braces on top of chart house to be fitted with toggle pins.
Top chests to be fitted with locks.
Locker of galvanized iron for Very's signals to be fitted inside mast
Eyes to be fitted on lower masthead for Jacob's ladders.
Rail in wake of forward 6-pounders to be altered.

Cleats to be fitted for handling boat lines.
Gratings for waterways to be placed.

8-INCH B. L. R. TURRETS AND BARBETTES.

Levers for opening hatches to be fitted.
Work of fitting guard rails on top of turrets to be completed.
Bucklers to gun ports and to loading ports to be completed.
Racks for wrenches to be completed.
Chocks to be fitted to peepholes between guns and in sighting hoods.
Gratings for turret floors to be placed.
Wood platforms to be placed.
Final work of installing mounts and accessories to be completed.

SUPERSTRUCTURE DECK.

Heeling indicators to be installed in place.
Stowage of two kedge anchors to be completed.
Steps to raised hatch coamings to be completed.
Lugs for battens on hatch coamings to be shifted so as to clear stanchion lugs where necessary.
Work of fitting gratings for 6-pounder guns in place to be completed.
Ladders to gratings for 6-pounder guns aft to be fitted in place.
Iron rungs to be fitted on hammock berthing just outside conning tower on both sides.
Gratings to be placed.

13-INCH B. L. R. TURRETS AND BARBETTES.

Eyebolts to be fitted over rammers.
Speaking tubes between sighting hoods to be completed.
Cowls for ventilating openings in turret tops to be completed.
Covering for girders to be fitted.
Fittings for stowing wrenches to be completed.
Removable chocks to be fitted to peepholes.
Bucklers for gun ports to be completed.
Lockers for breech gear to be completed.
Gratings in handling rooms to be placed.
Final work of installing mounts and accessories to be completed.
Platforms to be fitted under valves.

MAIN DECK.

Eyes to be fitted on jack and ensign staffs.
Stowage for stern anchor to be completed.
Work of fitting chafing strips on fore-hatch to be completed.
Hooks, shelves, etc., to be fitted in lamp room.
Steps to raised hatch coamings to be completed.
Letter box to be fitted.
New section of ridgepole to be fitted forward.
Secure in place and complete water supply to scuttle butts.
Sockets and bolts to receive legs of portable shears to be fitted.
Lewis bolts for blocks for afterboat falls to be fitted.
Belaying pins for rail on bow chock to be provided.
Boat davits to be tested.
Work of stowing hatch and torpedo cranes to be completed.
Gratings at doorways and elsewhere to be placed.
Hose racks to be stowed.

BERTH DECK.

Work of fitting curtain rods at doors, air ports, and on wardrobe shelves to be completed.
All tables to be secured in place.
Locker for hand-pump gear to be completed.
Benches in prisons to be completed.
Screens for torpedoes to be completed.
Shelves, etc., in torpedo rooms to be completed.
Rails around two forward hatches to be completed.
Eyebolts and pendant to be fitted in engine hatch for raising armored gratings.
Hand levers for windlass to be stowed.
Gratings and hatch covers to be placed.

BELOW BERTH DECK.

Turntables in 13-inch magazines to have springs eased.
Lumber irons to be fitted in upper compartment of hold.
8-inch hydraulic hoists to be completed and tested.
6-inch and 6-pounder hydraulic hoists to be completed, stops and gongs to be fitted, hoists to be tested.
Magazine-flooding arrangements as changed to be completed.
Angles forming drip pans to be fitted under 8-inch hoists and at cylinders for 6-inch and 6-pounder hoists.
Pads to be fitted on ends of ammunition tracks.
Means of shipping spare tiller to be provided.
Work of fitting rails around central station in spare dynamo room to be completed.
Securing of portable portions of bulkhead and deck in spare dynamo room to be completed.
Securing of portable portion of bulkhead in dynamo room to be completed.
Holes in bulkhead No. 29 in passageways under armor to be closed.
Locking metal doors to be completed.
Long hooks with staples and chains with padlocks to be fitted on metal doors to store and other rooms where no wire screen doors have been fitted.
Manhole covers to be overhauled and split pins fitted in ends of bolts where omitted.
Holes to be fitted in floors in lower wing passages for lifting.
Casing to be fitted over exposed air pipe in forward handling room on forward side of 13-inch inclosure.
Casing to be fitted over exposed electric-wire piping in after passageway on protective deck.
Gratings and hatch covers to be placed.
Ladders and gratings to be placed.

GENERAL.

Electric plant to be finally overhauled and tested.
Broken and missing lenses for air ports, deck lights, etc., to be replaced.
Grab rods on ship's side to be completed.
Lips to be fitted under outboard ends of drains and chutes to be fitted to water-closet discharges.
Boat booms to be placed.
Covering all water pipes in living spaces with lagging to be completed.
Cleats to be fitted at main and berth deck hatches and elsewhere as directed.
Life buoys to be tested with 20 pounds of phosphide of calcium.
Laying linoleum on unexposed decks, passageways, handling rooms, etc., to be completed.
Upholstery to be completed.
Shell racks to be completed.
Toggle chains to be fitted to portable pins on side ladder davits and boat cradles.
Additional eyebolts to be fitted where necessary.
Eyebolts to be fitted on ladders for ladder screens.
Lanyards and toggles to be fitted to air ports.
Grab rods to hatches to be completed.
Arrangements for stowing and locking hatches to be completed.
Stowage and fitting of wrenches to be completed.
Stowage of ditty boxes to be completed.
Rubber gaskets to shutters, water-tight doors, etc., to be finally overhauled.
Jacob's ladder to be fitted.
Broken and missing clamps to water-tight doors to be replaced.
All keys, padlocks, etc., to be fitted.
Plug all open rivet and bolt holes.
Brass rubbing plates to be worked where necessary.
Clips to be fitted behind hinged air ports.
Transverse frames to be numbered.
Water line to be marked inboard.
Fire rooms to be numbered.
Compartments and bunkers to be numbered, and capacities of bunkers marked on doors.
Marking of coal scuttles and portable chutes to be completed.
All work to be finally cleaned and painted.
Gratings in storerooms, magazines, etc., to be placed.
Portable furniture, miscellaneous outfit, awnings, sails, tarpaulins, etc., to be finally completed, weighed, placed on board, and properly stowed.

In my opinion this vessel is 99¼ per cent completed, on the basis that 100 per cent completion represents her condition when ready for sea, in all matters coming under the cognizance of the Bureau of Construction and Repair.

This vessel had her official trial on May 14, 1896, and in my opinion will be ready for delivery to the Government by July 7, 1896.

Photographic views, taken in accordance with the Bureau's instructions, will be forwarded as soon as completed.

Very respectfully,

W. L. CAPPS,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
BATH IRON WORKS,
Bath, Me., July 1, 1896.

SIR: In compliance with the Bureau's order of May 15 last, No. 801–A, I submit the following report, showing the condition of the work on gunboat *Vicksburg* at date:

Items.	Percentage of completion.	Items.	Percentage of completion.
	Per cent.	Transverse bulkheads—Continued.	*Per cent.*
Flat keel plate	100	No. 86	90
Vertical keel plate	100	No. 87	90
Stem-casting pattern	100	No. 90	90
Stem, wrought-iron portion	100	No. 99	100
Sternpost in place and completed, except covering after part	98	No. 102	95
Transverse framing	99	No. 104	95
Flat keelson plate	100	No. 112	95
Longitudinals throughout	100	Fore-and-aft bulkheads in shaft alley	90
Spar-deck beams	95	Tunnel between engine and fire rooms	100
Gun-deck beams	95	Fore-and-aft bulkheads, coal bunkers between frames 44 and 78	98
Berth-deck beams	95	Ammunition and storeroom bulkheads	90
Platform beams	98	Outside plating from spar deck to berth deck	80
Spar-deck stringers, ties, and plating	95	Outside plating and tie plates below water line	100
Spar-deck gutter angles	90	Inner-bottom plating	100
Gun-deck stringers, ties, and plating	95	Engine and boiler foundations	90
Berth-deck stringers, ties, and plating	95	Bilge-keel strake (wood)	95
All deck stanchions	80	Bilge keels ready to go on	90
Platform floors	95	A large number of bottom planks are gotten out.	
Hatch casings and coaling trunks on gun deck	90	Forgings and other fittings:	
Transverse bulkheads—		Tillers	100
No. 10	90	Awning stanchions	90
No. 16	90	Anchor davits	95
No. 28	90	Boat davits	80
No. 36	98	Mooring staples	95
No. 44	92	Air ports	5
No. 47	98	Life-line stanchions	60
No. 51	98	For water-tight doors	80
No. 60	100	For water-tight hatches	90
No. 66	96	Manhole covers	25
No. 74	100	Fresh-water tanks	25
No. 78	90		
No. 82	90		

The estimated percentage of hull work required by the contract completed is 45 per cent.

There is no reason at present why the vessel should not be completed ready for delivery on the date specified in the contract, viz, February 15, 1897. The time required to fireproof the wood material, however, is as yet unknown, and this may delay the completion of the vessel beyond that time.

Very respectfully,

F. L. FERNALD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
BATH IRON WORKS,
Bath, Me., July 1, 1896.

compliance with the Bureau's order of May 15 last, No. 801–A, I submit ring report showing the condition of the work on gunboat *Newport* at date:

Item.	Percentage of completion.
	Per cent.
ate	100
el plate	100
g pattern	100
ght-iron portion	100
in place and completed ex-	
ring afterpart	98
framing	90
plate	100
als throughout	100
eams	95
eams	95
beams	95
ams	98
tringers, ties, and plating	95
utter-angles	70
tringers, ties, and plating	95
stringers, ties, and plating	85
nchions	70
ors	95
gs and coaling trunks on	
	90
bulkheads—	
	60
	90
	90
	98
	92
	98
	98
	100
	90
	100
	90
	90
	90

Item.	Percentage of completion.
	Per cent.
Transverse bulkheads, etc.—Cont'd.	
No. 87	90
No. 90	90
No. 99	100
No. 102	98
No. 104	95
No. 112	90
Fore-and-aft bulkheads in shaft alley	40
Tunnel between engine and fire rooms	100
Fore and-aft bulkheads, coal bunkers between frames 44 and 78	98
Ammunition and storeroom bulkheads	90
Outside plating from spar-deck to berth-deck	70
Outside plating and tie-plates below water-line	100
Inner-bottom plating	100
Engine and boiler foundations	50
Bilge keel strake (wood)	98
Bilge-keels ready to go on	90
A large number of bottom planks are gotten out.	
Forgings and other fittings:	
Tillers	100
Awning stanchions	90
Anchor davits	95
Boat davits	80
Mooring staples	95
Air ports	5
Life-line stanchions	60
For water-tight doors	90
For water-tight hatches	90
Manhole covers	25
Fresh-water tanks	25

mated percentage of hull work required by the contract completed is 43

no reason at present why the vessel should not be completed ready for on the date specified in the contract, viz, February 15, 1897. The time to fireproof the wood material, however, is as yet unknown, and this may completion of the vessel beyond that time.

y respectfully,

F. L. FERNALD,
Naval Constructor, U. S. N., Superintending Constructor.

IEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
BATH IRON WORKS,
Bath, Me., July 8, 1896.

ere was shipped to the Bureau on the 6th instant, by the American Company, one box containing six photographic negatives and twelve prints of same, of gunboats *Vicksburg* and *Newport*, called for by the Bureau's May 15, 1896, No. 801–A.

y respectfully,

F. L. FERNALD,
Naval Constructor, U. S. N., Superintending Constructor.

F OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
THE CRESCENT SHIPYARD,
Elizabethport, N. J., July 11, 1896.

SIR: In compliance with the Bureau's letter No. 801-A, dated May 15, 1896, relative to photographic views and special report of work done on the vessel being constructed under my supervision, I have to respectfully submit the following report of work done on gunboat *Annapolis* since date of contract, November 20, 1895, to June 30, 1896:

Items.	Condition June 30, 1896
Flat keel	Seven-tenths completed.
Vertical keel	Eight-tenths completed.
Bracket frames	Seven-tenths completed.
Z-bar frames	Eight-tenths completed.
First longitudinal	Two-tenths completed.

The percentage of work completed under the contract is two-twentieths.

The contractors estimate that the contract trial will take place on or about February 15, 1897, and final delivery to the Government about March 15, 1897.

Photographic views and negatives forwarded per express.

Very respectfully,

JOHN B. HOOVER, U. S. N.,
Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
COLUMBIAN IRON WORKS AND DRY DOCK COMPANY,
Baltimore, July 1, 1896.

SIR: In compliance with the instructions contained in the Bureau's letter No. 801-A, of May 15, 1896, I have the honor to submit herewith a report describing the work done on torpedo boat No. 3 from July 1, 1895, to June 30, 1896, inclusive:

The frames, floors, reverse bars, upper-deck beams, keel plates, stem, stern and stern framing, vertical keel foundation under windlass, after cast-steel struts, and the flanged plate connecting the deck stringer with outside plating are completed.

The transverse bulkheads, including the frames for water-tight doors and manholes, are erected and 75 per cent riveted; the outside plating 80 per cent fitted and 60 per cent riveted; the flat keelson plates are 95 per cent fitted and riveted; the lower flanged plates of the fore and aft coal-bunker bulkheads are fitted; the forward and after conning towers are in place and 35 per cent completed; the boiler bearers and engine seatings are 20 per cent completed; the deck plating is 20 per cent fitted; the platform beams are 10 per cent fitted; the forgings for the rudder stock and frame and the spring bearers for the shafts are 40 per cent completed; the composition castings for vertical sliding water-tight doors, water-tank manhole covers, bulkhead stuffing boxes, and rudder bearer and stuffing box are 60 per cent completed; the furniture for the two staterooms and wardroom and the gratings for forward conning-tower platform are 65 per cent completed.

The two Schermerhorn folding boats, shaft tubes, cast-steel rudder quadrant, drain pipes, and fireproof lumber are in the yard.

The estimated degree of completion, based on the boat being fitted out ready for sea, is 48 per cent. The estimated date of contractor's trial is January 15, 1897, and of final delivery to the Government February 1, 1897.

Very respectfully,

GEO. H. ROCK,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
COLUMBIAN IRON WORKS AND DRY DOCK COMPANY,
Baltimore, Md., July 11, 1896.

SIR: In compliance with letter No. 801-A, of May 15, 1896, I have expressed to the Bureau to-day one box containing the negatives, together with two mounted prints

negative, of three views taken of each of the vessels being constructed at
ks.
y respectfully,

GEO. H. ROCK,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

IEF OF THE BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
COLUMBIAN IRON WORKS AND DRY DOCK COMPANY,
Baltimore, Md., July 1, 1896.

compliance with the instructions contained in the Bureau's letter No.
May 15, 1896, I have the honor to submit herewith a report describing the
e on torpedo boat No. 4 from July 1, 1895, to June 30, 1896, inclusive.
mes, floors, reverse bars, keel plates, stem, stern and stern framing, and
n under windlass are completed.
per-deck beams are 95 per cent completed; the vertical keel is 60 per cent
l; the after cast-steel struts are 60 per cent completed; the flanged plate
g the deck stringer with the outside plating is 55 per cent completed; the
e bulkheads, including the frames for water-tight doors and manholes, are
nt erected; the outside plating is 15 per cent fitted; the lower flanged
the fore and aft coal-bunker bulkheads are fitted; the forward and after
owers are 30 per cent completed; the forgings for the rudder stock and
l the spring bearers for the shafts are 40 per cent completed; the composi-
ngs for vertical water-tight sliding doors, water-tight manhole covers,
stuffing boxes, and rudder bearer and stuffing box are 60 per cent com-
le furniture for the two staterooms and ward-room and the gratings for
onning-tower platform are 65 per cent completed.
) Schermerhorn folding boats, shaft tubes, cast-steel rudder quadrant, drain
l fireproof lumber are in the yard.
imated degree of completion, based on the boat being fitted out ready for
per cent. The estimated date of contractor's trial is February 1, 1897, and
elivery to the Government February 15, 1897.
y respectfully,

GEO. H. ROCK,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

IEF OF THE BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
COLUMBIAN IRON WORKS AND DRY DOCK COMPANY,
Baltimore, Md., July 1, 1896.

compliance with the instructions contained in the Bureau's letter No.
May 15, 1896, I have the honor to submit herewith a report describing the
e on torpedo boat No. 5 from July 1, 1895, to June 30, 1896, inclusive:
nes, floors, reverse bars, stern and stern framing, flat keel plates, and foun-
der windlass are completed.
per-deck beams are 90 per cent completed; the stem is 85 per cent com-
le transverse bulkheads are 15 per cent erected; the forward and after
owers are 15 per cent completed; the forging for the rudder stock and
the spring bearers for the shafts are 40 per cent completed; the composi-
ngs for vertical sliding water-tight doors, water-tank manhole covers,
stuffing boxes, and rudder bearer and stuffing box are 60 per cent com-
le furniture for the two staterooms and wardroom and the gratings for
onning-tower platform are 65 per cent completed.
) Schermerhorn folding boats, shaft tubes and after cast-steel struts, cast-
er quadrant, drain pipes, and fireproof lumber are in the yard.
imated degree of completion, based on the boat being fitted out ready for
per cent. The estimated date of contractor's trial is February 15, 1897, and
elivery to the Government March 1, 1897.
y respectfully,

GEO. H. ROCK,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

IEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
COLUMBIAN IRON WORKS AND DRY DOCK COMPANY,
Baltimore, Md., July 1, 1896.

SIR: In compliance with the instructions contained in the Bureau's letter No. 801-A, of May 15, 1896, I have the honor to submit herewith a report describing the work done on the submarine torpedo boat from July 1, 1895, to June 30, 1896, inclusive:

The transverse frames, floors, vertical keel, and fixed torpedo tubes are completed.

The outside plating is all fitted and 80 per cent riveted; the stem is 75 per cent completed; the stern casting is 90 per cent completed; the forward and after propeller wells are 30 per cent completed; the anchor well is 40 per cent completed; the water and oil tanks are 65 per cent completed; the platform beams and plating are 25 per cent completed; the manhole covers and sea valves are 45 per cent completed.

The cast-steel struts, air compressor and accumulator, and air cylinders for 2,000 pounds pressure are in the yard.

The estimated degree of completion based on the boat being fitted out ready for sea is 32 per cent. The estimated date of contractors' trial is March 1, 1897. The date of final delivery to the Government depends entirely upon the boat's qualities, and, as changes may have to be made and new trials follow, I do not consider that an estimate of delivery to the Government can be made with any degree of accuracy.

Very respectfully,

GEO. H. ROCK,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF THE BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
WORKS OF JOHN H. DIALOGUE & SON,
Camden, N. J., July 8, 1896.

SIR: In pursuance of the instructions contained in the Bureau's letter, No. 801-A, of May 15, 1896, paragraph 4, I hereby make a report as to the progress made upon, and the condition of the work on gunboat *Princeton* at these works up to and including June 30, 1896, as follows:

Material.—The first carload of material was received on the 15th of April, 1896. The vessel at that date had been partly laid down in the mold loft.

Up to the 30th of June last there had been delivered in the shipyard of the contractors a total weight of plates, angles, bulb angles, Z-bars, and rivets amounting to 411,895 pounds. Of these, there had been weighed, in detail, riveted together, and fitted ready for riveting (including weight of rivets in the driven work) 61,863 pounds; red-lead paint used, 225 pounds; canvas used for stop water at watertight bulkheads, 9 pounds.

Foundation.—The foundation had been driven and the blocking erected for the support of the vessel during its construction.

Flat and vertical keel.—Between and including frames 30 and 92, a length of 105 feet of flat and vertical keel had been assembled upon the blocks and riveted together with their outer and inner angles and butt straps.

While the foundation was being driven there were 74 feet of flat keel, 62 feet of vertical keel, their outer and inner angles and butt straps, 30 adjoining floor brackets with their frames, reverse frames, and clips fitted together and temporarily erected upon a level platform of timber.

Transverse framing.—One hundred and forty-six Z-bars had been bent for 73 frames, from Nos. 26 to 98, inclusive, not counting the bulkhead angle frames.

Of these, 66 Z-bars for 33 full frames from 37 to 71 (omitting two bulkhead angle frames) had been riveted to their floor bracket plates, set up, regulated, and bolted temporarily in place against the first longitudinal.

Inboard brackets, with their frames, reverse frames, and clips for 33 frames, had been riveted together and fitted between the vertical keel and first longitudinal, starboard and port.

The inboard floor brackets will not be riveted to the flat and vertical keels and first longitudinals until the garboard strakes shall have been riveted in place. These brackets are left removable to facilitate the caulking of the continuous fore and aft outer angles of the first longitudinals against the garboards.

Longitudinal framings.—Fifty-nine feet of the first longitudinal plates had been put in place, starboard and port, and their outer and inner angles and butt straps riveted; but they were not riveted to the clips of the inboard floor brackets and of the frames.

The percentage of work completed under the contract is estimated to be 15 per ent.

It is estimated that the date of the contractor's trial will be May 1, 1897, and for he final delivery of the vessel to the Government, June 15, 1897.

Very respectfully,

WM. H. VARNEY,
Naval Constructor, U. S. N., Superintending Constructor Gunboat No. 18.

The CHIEF CONSTRUCTOR, U. S. N.,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
WORKS OF JOHN H. DIALOGUE & SON,
Camden, N. J., July 7, 1896.

SIR: In pursuance of the directions contained in the Bureau's letter, 801-A, of lay 15, 1896, I ship to the Bureau to-day by United States Express a box containing hree negative views of gunboat *Princeton* and two mounted silver prints of each, amely, view looking forward, view looking aft, view looking at starboard side, owing the condition of work on the vessel to June 29, 1896, on which day the pho- graphs were taken.

The special report called for in the Bureau's letter above referred to will follow at a early date.

Very respectfully,

WM. H. VARNEY,
Naval Constructor, U. S. N., Superintending Constructor Gunboat No. 18.

The CHIEF CONSTRUCTOR, U. S. N.,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY.
MORAN BROTHERS COMPANY,
Seattle, Wash., July 3, 1896.

SIR: In obedience to the instructions contained in the Bureau's letter of May 15, 96, No. 801-A, I have the honor to submit the following report of the work ecuted in connection with the construction of torpedo boat No. 8 from July 1, 1895, June 30, 1896, inclusive:

The contract for this vessel was signed on October 19, 1895. The first frame was nt April 6, 1896, and the keel laid June 22, 1896. The following is a detail state- nt of the work done upon this vessel during the period reported upon:

Flat keel: 95 per cent completed in place, except riveting.
Vertical keel: 30 per cent completed in shops.
Flat keelson: Transverse clips completed in place.
Stem: Completed in place.
Stuffing box and rudder bearer: Nothing done.
Rudder: Nothing done.
Shaft tubes and struts: Struts received.
Transverse frames: 95 per cent completed in place.
Main-deck beams: Completed in shops.
Main-deck plating and stringers: Stringer angles, 50 per cent completed in shops.
Forecastle-deck beams: Completed in shops.
Plating in crew space: Nothing done.
Outside plating: Nothing done.
Fore-and-aft-bulkheads: Angles, 40 per cent completed in shops.
Transverse water-tight bulkheads: 60 per cent erected; 30 per cent riveted.
Stanchions: Nothing done.
Guard rails and stanchions: Nothing done.
Awning stanchions: Nothing done.
Hatch coamings and skylights: Nothing done.
Engine, boiler, and shaft bearers: Angles completed in shops.
Water-tight doors: Patterns under way.
Conning towers: Nothing done.
Coaling scuttles: Patterns completed.
Holes in bulkheads for engineer's and ordnance pipes: Nothing done.
Deck lights: Nothing done.
Air ports: Patterns completed.
Fixed ammunition rooms: Nothing done.
Mast step: Nothing done.

Woodwork in cabin, etc.: Nothing done.
Forced draft arrangements: Nothing done.
Ventilation: Cowl and goose-neck ventilators, 50 per cent completed in shops.
Steering apparatus: Engine, 85 per cent completed in shops.
Drainage and pumping systems: Nothing done.
Water courses: Nothing done.
Torpedo racks: Nothing done.
Water-closet and lavatory for officers: Nothing done.
Water-closets and lavatory for crew: Nothing done.
Propeller guard: Nothing done.
Anchor beds: Nothing done.
Awning room: Nothing done.
Linoleum for decks: Nothing done.
Attachments for rigging, chain plates, bolts, etc.: Nothing done.
Water tanks: Nothing done.
Galley bed: Nothing done.
Sea steps, etc.: Nothing done.
Platforms for guns and air compressor: Nothing done.
Platforms and gratings: Nothing done.
Wood floor on decks: Nothing done.
Storeroom and shelving: Nothing done.
Portable furniture: Nothing done.
Painting: Nothing done.
Draft figures; Nothing done.
Jacob's ladder: Nothing done.
Mess and clothes lockers for crew: Nothing done.
Iron rounds or ladders: Nothing done.
Wire cable fittings: Nothing done.
Hatch frames: Nothing done.
Hatch ladders: Nothing done.
Side ladders: Nothing done.
Boat davit and torpedo crane: Nothing done.
Boat cradles: Nothing done.
Boats: Nothing done.
Anchor davits: Nothing done.
Brass label plates: Nothing done.
Brass rubbing plates: Nothing done
Signal pole: Nothing done.
Watch bell: Nothing done.
Fittings for lamps: Nothing done.
Reels: Nothing done.
Chronometer and compass locker: Nothing done.
Warping cleats: Nothing done.
Cooperage: Nothing done.
Eyebolts and ringbolts: Nothing done.
Oil tanks: Nothing done.
Heeling and indicators: Nothing done.
Steering indicators: Nothing done.
Hammock hooks: Nothing done.
Ensign staff: Nothing done.
Running lights: Nothing done.
Miscellaneous outfit: Nothing done.
Painting, graining, and polishing woodwork: Nothing done.
Galvanizing and painting steel and iron: Stem, flat keel, transverse frames, and transverse bulkheads galvanized.
Testing water-tight compartments: Nothing done.
Windlass: 85 per cent completed in shops.

On the basis that 100 per cent represents the vessel completed for sea in all matters under the cognizance of the Bureau of Construction and Repair, I estimate the present state of completion at 12 per cent. This vessel should, in my opinion, be ready for her trial trip by January 1, 1897, and for delivery to the Government by January 20, 1897.

The photographs called for by the Bureau's letter above referred to will be forwarded as soon as received from the photographer.

Very respectfully,

LAWRENCE SPEAR,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF THE BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR,
MORAN BROTHERS COMPANY,
Seattle, Wash., July 8, 1896.

SIR: I have to inform you that, in accordance with the instructions contained in e Bureau's letter of May 15, 1896, No. 801-A, I have forwarded by Northern Pacific xpress three photographic negatives of torpedo boat No. 8, together with two mounted prints of each. These views were all taken on July 1, 1896.

Very respectfully,

LAWRENCE SPEAR,
Assistant Naval Constructor, U. S. N.; Superintending Constructor.

The CHIEF OF THE BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

EPORTS FROM NAVAL CONSTRUCTORS CONCERNING NECESSARY IMPROVEMENTS IN NAVY-YARD PLANTS.

The following reports from naval constructors were submitted in mpliance with orders from this Bureau, and show in detail the provements contemplated as being necessary to put the navy-yard ants in condition to economically undertake any work that may come them, either of building or repair:

UNITED STATES NAVY-YARD,
New York, June 5, 1896.

SIR: In compliance with letter No. 802-A, from the Bureau of Construction and pair. dated May 15, 1896, I have to submit the following report concerning the nstruction plant of this yard, together with certain suggestions relative to improve-nts, alterations, and additions.

I have made certain recommendations as to the improvement of the plant from me to time since my assignment to duty here in August, 1895. Such of these rec-mmendations as were approved by the Bureau have been carried out. The most portant of the recommendations still await the action of the Bureau.

Of the improvements that have been carried out, the following are the most portant:

The installation of electrical plant and workshop in building No. 10, using the gine and dynamos originally installed in the old punch shed, and taking steam at st from the yards and docks' marine boilers in the same building, at 40 pounds essure. About two months later one of the old tubular boilers taken from the nch shed was erected in place of two small marine boilers, furnishing steam to e dynamo engine at 80 pounds pressure.

Two saws, a planer, and a drill press were transferred from the sawmill and cted in the boat shop, together with an old 12-horsepower electric motor. This ows work to be done at a much greater advantage in the boat shop.

The new bending shed was turned over to this department in October, 1895, since ich time the forges, flange fire, clamps, blower fans, etc., have been erected there, 5-foot plate furnace and 70-foot angle furnace built, and a large bending slab put place, together with necessary trolleys for handling material. All this work is w completed, and the plate furnace has had several heats on it. In addition to e above, foundations for all of the hydraulic machinery have been laid in this ed and the work of installing the machinery commenced. Two large double-end nches and shears are also being erected, to be operated by motors, in event of an ergency arising before the completion of the new punch shed.

The hydraulic accumulator, pump, etc., have been erected in the pump room of ilding No. 10, and tested, showing an available pressure of 1,600 pounds per uare inch.

The new office building (No. 6) has been completed, and the offices were moved into on Saturday, April 18. The necessary shelving, bell wiring, blue-print frames, ., have been fitted. The department of yards and docks were requested to make tain changes and additions, such as providing proper ventilation under the lower or, fitting a standpipe in each end of the building for fire hose connections, etc., ich work has been taken in hand. The building is now well adapted to office rposes, and every room has been assigned. A plan showing the arrangement and ignment is forwarded herewith.

The second floor of building No. 10 has been cleared out since the removal of ces, and at one end racks for the stowage of spare patterns have been erected l the patterns arranged on them.

Work which has been authorized, but delayed owing to lack of funds, consists principally in erecting a reverse boiler in the joiner shopbuilding No. 14 and in the erection of the remaining two tubular boilers taken from the old punch shed, in building No. 10, to replace two marine boilers, and to supply steam temporarily to the new punch shed, to the old dock pump, and for heating purposes during the winter months.

The principal recommendations still awaiting the action of the Bureau are those concerning a central boiler plant and a new construction foundry, to which I shall again refer.

Requisitions for such tools as I have considered absolutely essential to the completion of the plant for the class of work now on hand have been submitted. These I shall enumerate further on.

I have now to make the following recommendations and renewal of recommendations for the improvement of the plant, giving them with reference to shops and buildings concerned, and in what I consider the order of their importance:

(A) Fitting up new punch shed. I propose to supply steam for running this shop from the boilers set up in building No. 10, until a decision is reached on the central boiler-plant question. A requisition for a new 75-horsepower Corliss engine has been submitted, and I propose to erect this engine in the machine shop (building No. 20) after which the 115-horsepower engine in that shop will be taken down, cylinder rebored, thoroughly overhauled, and then erected in the new punch shed. As soon as it is possible to commence work inside the new building the shipfitters' tools will be erected without delay.

Following is a list of the principal tools that will be erected in the new punch shed:

One set heavy 25-foot rolls (to be required).
One set light 25-foot rolls (temporarily).
One set mast rolls (14 feet).
One set straightening rolls.
Two Sellers punch and shears for 2-inch plates.
Two Long & Allstatter double-end punches and shears, A and B.
Two Long & Allstatter punches and shears, B.
One Bement & Miles punch and shears, 1 inch.
Two Bement & Miles punches and shears, three-fourths inch.
One Bement & Miles shears, one-half inch.
One Hilles & Jones angle punch.
Two Bement & Miles two-side edge planers.
Two Bement & Miles edge planers.
One Niles Tool Works edge planer.
One double-angle shears.
One single-angle shears.
Two horizontal punches.
Two radial drills.
Four overhead drills.
Two Crane countersinks (required).
Necessary cranes for handling material.
Three small punches for miscellaneous work (to be required).

With the above outfit of shipfitters' tools, in connection with the new furnaces and the hydraulic machinery, the department will be prepared for any class of shipfitter's work. The following machinery being of no use to the department, I recommend it to be surveyed and sold:

One 250-horsepower Corliss engine (unsuitable).
One set 16-foot rolls, with engine (unsuitable for Government purposes).
One set 12-foot rolls (unsuitable and worn out).
One punch, make of Stover Machine Company (worn out).
One punch, make unknown (worn out).
One double-end punch and rivet shears (unsuitable and worn out).
One Long & Allstatter beam punch (unsuitable in design).
One Long & Allstatter multiple punch (unsuitable for Government purposes).

Estimated cost for laying foundations, moving and erecting the tools enumerated above	$4,200
Overhauling and erecting engine	400
Running line and counter shafting, including new pulleys, etc., required	1,200
Fitting up tool room, complete	800
Fitting up mold loft, making battens, straight edges, etc	1,200
Fitting trolleys and purchasing five new 20-foot cranes	2,400
Total	10,200

Time, sixty days.

The cost of new tools will be included in the whole items for new tools further on. In connection with the new punch shed, I may state that the matter of the advisability of fitting up this shop with electric motors has been carefully gone into, and a report made by Assistant Naval Constructor Zahm was forwarded with my letter No. 517-96 of April 28. Later information on this subject leads me to believe that somewhat larger motors would be required, probably, for the individual tools, than proposed by Mr. Zahm. This, I believe, was the experience of the Pencoyd Works when they first adopted electric power, many of the motors originally allowed proving too small. This would increase the first cost estimated by Mr. Zahm by perhaps 30 to 40 per cent, making the proposition still less advisable.

I have further to recommend, in connection with the punch shed, that the old shed (No. 116), be left standing for the present, and that the end of it nearest the punch shed be repaired sufficiently to use for the stowage of such steel material as has to be kept in stock, the other end to be used for the present for the stowage of tools unsuitable for use and recommended to be surveyed and sold.

Estimated cost of repairs recommended above, $600.

(B) That a central boiler plant be established for the department of construction and repair, in the quadrangle formed by building No. 11, to supply steam to the several shop engines, as suggested and urged in my letter of September 25, 1895, and October 8, 1895, and as recommended by the board of which Chief Engineer Farmer was senior member. All of the construction and repair boilers are considerably worn; they take up shop room in many instances; they require more men to tend them than if there were a single nest of boilers as proposed, and it is much more difficult to keep them in a proper state of repair without interfering with the continuous progress of work. In this connection, I refer to the letters mentioned above, and to the report and estimates of the Board.

Estimated cost, $54,042.

(C) New construction foundry. This was urgently recommended in my letter, No. 291-96, of March 6, forwarding plans and estimates, in addition to which I afterwards forwarded data showing the output of the construction foundry during six months and emphasizing its importance in connection with other work and the inadequacy of the present foundry. I would again respectfully call attention to these letters and urge the very great necessity of the recommendations being carried out. This recommendation carried with it the transfer of the pattern shop to the old mold loft in the building with the joiner shop No. 14. This would also be a most desirable change.

Estimated costs, including new brass furnaces, cupola, 5-ton electric crane, core oven, etc.: Moving pattern shop, $680; new foundry, $10,415; total, $11,095.

Time, sixty days.

In connection with the foundry, I propose making certain inexpensive tests in connection with burning liquid fuel in the brass furnaces. Two burners, as supplied by Carnthers & Co., have been required, with which tests will be made in two of the old brass furnaces, while the company now carrying out tests of liquid fuel with torpedo boat No. 2 wish to make a proposition for the testing of their apparatus, they to supply all the necessary appliances free of expense, if the Government will fit up a furnace for them. These experiments may prove valuable, as it would be more desirable and satisfactory to use liquid fuel in the brass furnaces, if practicable, besides a saving in time and in the life of crucibles.

(D) Paint shop. In fitting up the new punch shed, the shipfitters' tool room will be installed in that building, vacating the compartment of building No. 10 at the Second street end. This will be a much more desirable location for the painters, being nearer the water front than at present, and providing a shop where the danger from fire will be greatly diminished, as it is at present located in the same building with oil and other combustible stores. In addition to this, finished furniture is stored on the third floor of building No. 10, and I therefore recommend that the painters be transferred as suggested above, and that the old construction drawing and time office be used for varnishing and finishing furniture, etc. This will leave the constructor's and clerks' offices in the end of building No. 10, second floor, still available for the same purposes if it should be found necessary to so use them.

Estimated cost for transferring engine, grinders, etc., and fitting up new paint shop in building No. 10, complete, $500.

Time, eighteen days.

(E) Rigging loft. The laborers and riggers have now only a very small space on the ground floor of building No. 21, well back from the water front. The other end of the building is used for the storage of boats, for which it is very suitable. Although a small part of the new shipwrights' shed has been assigned for the stowage of dock gear, I have to propose that the old oakum mill, building No. 25, be fitted up for use, the second floor as a rigging loft, and the first floor for laborers and dock gear. New sheathing and flooring is about all that will be required to put the building in good condition, and it will afford a most suitable and central location

for the laborers and riggers. I have to recommend that the whole of building No. 21 be devoted to the stowage of boats, after the riggers' and master shipwright's and laborers' offices are removed.

Estimated cost for repairing old oakum mill and fitting up for laborers and riggers, $1,500.

Time, thirty days.

(F) In a previous communication, I suggested that the oakum mill be rebuilt between the two timber docks for the stowage of dock gear, etc. I have now to suggest that the Bureau of Yards and Docks be requested to fit up the oakum mill as recommended in (E), and in addition to build a light shed, about 50 by 20 feet, between the timber docks, to consist merely of a roof and necessary framing to carry it, to be used for the stowage of shores, brows, spare blocks, etc., and protect them from the weather.

Estimated cost, $1,200.

(G) Electric plant. The generators at present consist of two 25 K. W. shunt-wound machines of different types. They are unsuitable in design for motor circuits, as they will not maintain a constant voltage under sudden and varying loads. I have submitted a requisition for a 50 K. W. multipolar compound-wound generator, at an estimated cost of $1,220, to replace the two now in use, one of which will be retained for testing purposes, lighting ships, etc., at 80 volts, and the other can be made use of as a motor. With the approval of the foundry recommendations, including from 50 to 60 horsepower in motors for blast blower, electric crane, and plumber shop, a second 50 K. W. generator will be required, together with high-speed engine for driving it. The electric plant will then be complete and most efficient, with two 50 K. W. electric generators of latest type and one 25 K. W. generator for testing purposes.

Estimated cost for additional generators, one new engine, foundations, etc., including dynamo already required, $3,840.

(H) Boat shop and sawmill. In my letter of May 6, No. 155–96, I recommended that when the new shipwrights' shed should be erected it be placed parallel to the sawmill, as originally intended, but that the space between be reduced 40 feet and roofed over, for the large circular saw and planer. These machines are now on the second floor of the sawmill, and the saving and convenience in having them on the ground floor would soon counterbalance the expense of moving them. This would also leave the second floor of the sawmill clear, and the space could be used to advantage by the boatbuilders, who are now greatly crowded, for the making and stowage of boat outfits, etc. I recommend that these changes be made, at an estimated cost of $2,200. Several machines, necessary for the efficient working of the sawmill and boat shop, have been required, and are included in list below.

(I) Machine shop. The machine shop as it stands is not well arranged. There are a number of tools practically useless that should be removed, and a number of modern tools are needed, some of which have been required. I have to recommend that the following tools be removed from the shop, surveyed, and sold:

One set 12-foot rolls, obsolete and worn out.
One small steam hammer, Hotchkiss patent.
One double head drill press, make of New York Steam Engine Company.
Two radial drills, old type and worn out.
One plate shears, Stover Machine Company.
One punch, William Sellers & Co., obsolete type.
One steam riveter.
Two 16-foot edge planers, make of Sellers & Co.
One small drill press, worn out.

I have further to recommend that the tool room be moved from its present location near the boilers and engine to next the master shipfitter's (inside) office, and that the new tools required be erected to best advantage in the spaces vacated. In event of the approval of recommendations as to central boiler plant, a storeroom should be fitted up in the corner now occupied by boilers and stock.

Estimated cost of moving tool room, building foundation for new 75-horsepower engine required, moving condemned tools from shop, and erecting new tools, countershafting, etc., $1,200.

(J) Granite dry dock. The recommendation made in my letter of May 28, No. 630–96, that the keel plates and runners for bilge blocks in the granite dry dock, which are rotten and unsafe, be entirely renewed, having been approved, the work will be done if possible before docking the *Chicago*.

Estimated cost: Labor, $2,000; material, $2,700; total, $4,700.

Time, sixty days.

In this connection I have to refer to my letter of May 21, No. 602–96, requesting that the department of yards and docks be authorized to overhaul the capstan around the granite dock, most of which can not now be operated at all.

I have further to suggest that the Bureau of Yards and Docks be asked to close

l gates for the granite dock on the inside, or to make them tight, as
a certain extent, and will not be required since the fitting of the new

g room. A room in the new office building, No. 6, has been assigned for
oses, adjacent to the requisition office. In addition to setting up the
ıg machine and 100,000-pound Riehle testing machine, now in possession
tment, the latter to be operated by an electric motor, which has been
ave to recommend that this room be suitably fitted with lockers, sink,
., etc., and that the necessary instruments and chemicals for carrying
s as are required to be made by this department be purchased as soon
It is important that the department should be equipped with such
d the outlay required is comparatively small. Estimated cost of fitting
mended above: Labor, $600; material (including instruments, etc.),
, $2,100.
, and in connection with the changes and improvements outlined above,
g tools and machines are urgently needed for the construction plant.
not include the outfit for the new foundry, it being a part of the esti-
shop, nor for the new electric generators, also included in estimate for
t. Those of the tools that have already been required are marked *.
sts are attached:

ch shed:

ot bending machine	$11,500
ıe countersink machines *	700
all machines for punching and shearing	2,400
:	
heading machine *	1,150
machine	1,000
op:	
l planing machine *	160
ing and facing machine *	125
and boat shop:	
le surfacer *	400
l circular-saw table *	165
ing and facing machine *	125
ells planer	845
shop:	
ch brass lathe *	1,027
ıch Reed engine lathes *	620
rne & Sharp milling machine *	900
y tool grinder *	240
ch vertical boring mill *	1,500
orsepower Corliss engine *	1,750
al drill presses	600
spindle centering machine (Pratt & Whitney)	315
hop:	
patternmaker's lathe	500
	26,022

r of May 19, No. 589–96, I urged the necessity for providing water-closet
ons for the workmen in separate and detached buildings, both as a
itary measure and to prevent loafing. I then requested that the civil
he yard be asked to furnish report and estimates for the same, and I
o refer to it as a most important matter and one requiring early con-

to refer to my letter No. 572–96, of May 14, requesting that the Bureau
Docks be asked to build a suitable shed for the storage of about 250
between dry docks Nos. 2 and 3, with reasons for the same, and to the
ce concerning the deck winches taken from the *Indiana*, which I recom-
ıy letter of January 11 be forwarded to this yard for the purpose of
ted into dock capstans. The transfer of these winches to the depart-
ls and docks was authorized in letter No. 695–A from the Bureau of
and Repair, dated May 13, and the authority for converting them given
2282–96 of May 12, from the Bureau of Yards and Docks.
is a summary of the estimated cost for carrying out the improvements
led above:

ıw punch shed complete	$10,200
ısary repairs to shed No. 116	600
boiler plant, including building and stack	54,042
:tion foundry, complete	10,415

Transferring pattern shop	$880
Transferring and fitting up paint shop	560
Fitting up old oakum mill for laborers and riggers	1,560
Building light shed between timber docks	1,200
Increasing and fitting up electric plant	3,840
Making necessary changes in machine shop, erecting new tools, etc	1,200
Transferring large circular saw, fitting light roof, erecting new tools, etc	2,200
Renewing blocks in granite dock	4,760
Fitting up construction and repair testing room, complete	2,160
Estimated cost of new tools required	26,022
Total	119,189

Plans of the arrangement of the new office building and punch shed, and also a copy of one of the plans submitted by the board on central boiler plant, three in all, are forwarded under separate cover. The last named covers all of the buildings under construction and repair, and is for general reference in connection with the report.

I have to earnestly recommend that the above recommendations may receive the earliest possible consideration and action of the Bureau, as being essential to the prompt and efficient performance of work at this yard.

Very respectfully,

FRANCIS T. BOWLES,
Naval Constructor, U. S. N.

The COMMANDANT, *Navy-Yard, New York.*

[First indorsement.]

NAVY-YARD, NEW YORK, *June 17, 1896.*

Respectfully forwarded to the Bureau of Construction and Repair.

There appears to be no prospect of the navy-yard being used as a great construction yard in the future. It seems probable that most of our work will be in the nature of repairs; therefore I do not think it expedient to fit up for the building of vessels to any extent, and I would suggest that no more plant be purchased at present than is necessary to fully perform all the work of repair that we are likely to be called upon to do in the near future.

With regard to the project of the central boiler plant and introduction of certain steam engines, I consider that no considerable addition should be made to such plant until the Navy Department has decided whether it should use electricity as a motive power for doing all the mechanical work of the yard. This important question should, in my opinion, be decided by a board of experts, to be appointed by the Secretary of the Navy, as suggested in my indorsement upon a report transmitted by me to the Secretary under date of the 29th ultimo.

As we already have a yard chemist and a laboratory, I think it would be unadvisable at present to expand to any extent, in the chemical line, in the Department of Construction and Repair.

My views with regard to foundry work for the department of construction and repair are expressed in an indorsement, dated March 6, upon a letter from the naval constructor proposing a new foundry and dated March 6, 1896.

M. SICARD,
Commodore, U. S. N., Commandant Navy-Yard and Station.

UNITED STATES NAVY-YARD, NORFOLK, VA., *July 8, 1896.*

SIR: In compliance with instructions contained in letter from the Bureau of Construction and Repair of May 15, 1896, No. 802–A, I have the honor to submit the following recommendations and estimated for the improvement of the construction plant at this yard:

Too much stress can not be laid on the necessity for an additional dry dock of sufficient size to accommodate the largest ships now in the service or likely to be added. The larger of the two existing docks is of barely sufficient width at the entrance to allow the docking of ships of the size of the *Texas* at light draft; and when that ship is at load draft it becomes practically impossible to dock her without injury. A suitable site is available adjacent to the present wooden dock.

Lack of berthing space threatens at times to seriously reduce the efficiency of the yard. On several occasions it has occurred that both dry dock and all the available berthing space were in use, and it has been necessary to berth a ship at St. Helena across the river from the yard. The timber basin is no longer of any use for its original purpose, and I recommend that the part lying between Rowan avenue and the river be cleared out, deepened, surrounded with retaining walls, and supplied with a swing bridge across the entrance. The berthing space thus obtained would be

nally valuable on account of its nearness to the shops. The portion of the tim- asin lying to the west of Rowan avenue should be retained for the stowage of timber.

e shipfitters' shop is entirely too small to accommodate even the present inade- e supply of tools, and the building is incapable of enlargement. I strongly ar in the recommendation made by my predecessor that a new shop be built on round to the south of the present shop, adjacent to the timber basin, and sup- with cranes, elevators, and other modern appliances, and with sufficient new inery to enable the work to be properly done, including a power plant and rical plant.

e plumbers' department is at present very badly crowded; the coppersmiths' is too small to accommodate the number of workmen that should be employed e work even now in hand, and it has been necessary to move the tin shop into nt mast house, the result being a loss of efficiency. The building now used as hipfitters' shop should, when vacated, be converted into a plumbers' shop. Its s ample to accommodate all the shops belonging to the plumbers' department.

e building now containing the foundry and shipsmiths' shop is in bad repair and s a new roof. Its walls should be extended to include the space rendered vacant aring down the present plumbers' shop, and the roof should be replaced by a trussed roof, covered with corrugated iron. The north third of the enlarged ing should then be divided off for use as a foundry, the present foundry being ely inadequate to the needs of the department. The whole building should tted with furnaces, cupolas, forges, and air blast in accordance with latest ice.

estimate for the above changes in shop, including rearrangement of shop iors, installation of tools, new tools and equipment, is $150,000, and the expend- of this sum would be amply justified by the increased economy and rapidity of ork.

ere is great need for a large floating derrick, and such a derrick should be built naintained by this department. A 100-ton derrick could be built for $85,000, recommend that this be done. The need for this derrick has been repeatedly ed out by my predecessors.

ing to the considerable distance (nearly 2,000 feet) between the shops and dry s, it would greatly decrease the cost of handling material if this department 10-ton locomotive crane and car. I recommend the purchase of such a crane. $4,300.

ien ships are in dry docks or near them, a great deal of time is lost by reason eir considerable distance from the shops. I therefore concur in the recom- lation made by my predecessor that a small shop be built between the docks and lied with a few machine tools, so that it will not be necessary to travel so often the ships to the shops. The tools could be driven by a 40-horsepower engine, lied with steam from the pump-house boilers, or by means of electric motors, n from already established electrical plant. It should be provided with sheds orage of docking gear. Estimated cost, $20,000.

the above improvements the most urgent of those directly pertaining to the au of Construction and Repair are the new shipfitter's shop and the consequent ges which its erection would allow to be made in the arrangement of the black- h and plumber's shops and in the foundry.

order to equip the various shops, as at present arranged for any work that may quired, new and additional machinery is needed, consisting of two sets of small a hydraulic keel-plate bender, one combined punch and shears with 60-inch t, a large sand-papering machine, a blast system for disposing of the shavings lust in the joiner shop and sawmill, and a number of planers, drill presses and s, as shown in detail in the following list. I recommend that these tools be lied. Cost, $52,455.

SHIPSMITH SHOP.

	Cost.
t bolt header	$140

PLUMBER SHOP.

combined punch and shears to punch ¼-inch hole in ⅝-inch iron and to 36-inch sheet No. 12 gauge iron	325
power and hand machine for cutting off and threading pipe ¼ inch to ches, with extras	525
hydraulic machine for bending pipe	815
small electro-plating tank and outfit for nickel plating	100
buffing lathe, buffing wheels, and extras	85
Total	1,850

SHIPFITTERS' SHED.

	Cost.
One 16-inch swing engine lathe with back gear	$400
One set plate-bending rolls, power driven, to take a 14-foot plate, capable of rolling a ¼-inch plate into a 12-inch cylinder	5,000
One set plate rolls, hand and belt, to roll ⅜-inch plate into cylinder, 8 feet long.	1,000
Two patent double-chain screw-hoisting machines, to lift 6,000 pounds	200
One steam-driven combined punch and shear with 60-inch throat, capable of punching a hole 2½ inches diameter in 2½-inch plate and to shear 2½-inch plate	10,000
One hand jib crane similar to cranes in shipfitter's shed, capacity, 6,000 pounds	700
One screw machine with a chasing apparatus and back gear and automatic feed to cut studs up to 2 inches diameter	1,000
One hydraulic plate-bender to take plate 24 feet long and to be capable of bending 1½-inch plate cold	15,000
Six electric drill motors, 2 horsepower	2,400
Total	35,700

SHIPFITTERS' SHOP.

* One No. 3 Universal milling machine, Brown & Sharpe's catalogue, p. 8	1,500
* One No. 2 Universal grinding machine, Brown & Sharpe's catalogue, p. 44.	1,000
* One 10-inch shaper	350
One twist-dril grinder for drills ¼ inch to 2½ inches	300
* One pipe cutter, with adjustable dies, for pipe 1¼ inches to 6 inches	1,000
Total	4,150

JOINER SHOP.

* One 8-inch four-sided molder, with extras	750
Three Universal trimming machines, with extras	375
One Buck's mortising and tenoning machine for blind stiles, with extras	175
* One Buffing lathe and fittings, No. 1½	85
One Bucks blind slat and crimping machine, complete	75
* One door and cabinet clamping machine, with sash drawing attachment, etc.	160
One Dado variety saw bench, with jointer attachment and extra saws	450
One power-feed jointer and planing machine, 20-inch	300
* One planing, panel raising, and polishing machine, No. 2, to plane 24-inches wide and ⅛ to 6 inches thick	450
One 30-inch pattern-maker's lathe, No. 7, iron bed, with chuck and face plates.	450
* One Royal Invincible sander, 60 inch, with attachments	1,800
* Renewing and extending system for taking care of shavings and saw dust.	3,000
Total	8,070

BLOCK SHOP.

One 20-inch pattern-maker's lathe, iron bed	400

BOAT-BUILDER'S SHOP.

One No. 3 ripsaw bench, with extra saws	450

SAWMILL.

One No. 5 band resaw, 48-inch wheels	1,000
* One band-saw scarfing machine	175
* One brazing iron forge	45
* One retoothing machine for band saws	75
Total	1,295

PAINT SHOP.

* One electric motor for paint mill	400

Of the tools mentioned in above list, those marked with a * are most urgently needed, and their immediate purchase, at a cost of $12,680, is recommended.

SUMMARY.

Rearrangement of shop interiors, new tools, and equipment	$150,000
Machinery for new one-story shop, to be located between the two dry docks, and for erecting and installing plant in same	20,000
Locomotive 10-ton traveling crane and car	4,300
Floating self-propelling derrick, 100 tons capacity	85,000
Tools needed for properly equipping present shop (of which tools to the amount of $12,680 are very urgently needed)	52,455
Total	311,755

Very respectfully,

A. W. STAHL,
Naval Constructor, U. S. N.

The COMMANDANT, *Navy-yard, Norfolk, Va.*

NAVY-YARD, MARE ISLAND, CAL., *July 6, 1896.*

SIR: In accordance with the letter of the Bureau of Construction and Repair, No. 802-A, dated May 15, 1896, I have the honor to submit the following report concerning improvements, alterations, and additions to the construction plant of this navy-yard to enable work to be performed more economically and more promptly.

The efficiency of this department being largely dependent on the efficiency of the navy-yard as a whole, it is also necessary to consider matters which are not directly under the cognizance of the Bureau of Construction and Repair.

The greatly increased importance of this navy-yard, at present the only one on the Pacific Coast, is not properly appreciated. The work now in hand or which will be required in the near future consists of extensive repairs of six vessels now in ordinary, similar repairs to the *Charleston*, soon to be placed in ordinary, and the usual repairs to the ships in commission of the Pacific Station, including extensive repairs to the *Monterey* from damages caused by collision, which will necessitate four weeks' exclusive use of the only dry dock at this navy-yard.

In my annual report of last year it was stated that this navy-yard, although worked to its full capacity, was not properly equipped for performing with economy and dispatch the work it would be expected to perform in time of war. Yet the work to be done in the near future and during a time of profound peace is so extensive that it can not be done promptly and economically, as the plant is of such limited capacity that when the exigencies of the service necessitate unusual expedition with the repairs of one ship the repairs of all others are correspondingly delayed.

I therefore urgently recommend that the construction plant of this navy-yard be increased in capacity without delay; all the shops are at present inadequately equipped, and the work is delayed and is more expensive from the absence of facilities which are rightly considered absolutely necessary in successful private establishments.

A tracing of plan No. 1987 is forwarded herewith, showing the location of the various shops, the lettering on the plan corresponding with that of this report.

The power for the various shops of this department is furnished by three sets of engines and boilers—a large, new Corliss engine (A), a small, old engine at the sawmill (B), and a small, old engine at the joiner shop (C). The two small engines have but one boiler each, and when from any cause their boilers can not be used all the machine tools operated by these engines must be shut down.

This department has no electric plant; its advantages for construction work are everywhere recognized; its field of usefulness is increasing daily, electric motors being important aids in reducing the amount of wasteful and slow hand work in ship construction.

As the Corliss engine is of ample power for all the work of this department, it is recommended that an electric plant be installed (J) of such capacity that portable lights and motors may be used to facilitate the work on ships under repair, and that electric motors replace the engines and boilers at the sawmill (B) and at the joiner shop (C), which will furnish the power for the new shipfitters' shop (E); estimated cost, $17,000.

To properly equip the new shipfitters' shop (E), recently authorized, many additional tools will be required, and it will be necessary to remove the old tools from the present shop (D) and install them in the new shop; estimated cost, $30,000.

The present foundry (I) is inadequate to economically perform the work in sight; it is recommended it be transferred to the present location of the shipfitters' shop (D) as soon as it is vacated, and that an additional cupola, a larger drying room, and additional brass furnaces and derricks be provided; estimated cost, $7,500.

The smithery (G) is equipped with old hammers, forges, etc., which are so much worn as to be continually breaking down. There is but one bolt machine and there is no reverberatory furnace for utilizing scrap metal; estimated cost of new tools, forges, etc., $14,500.

The machine shop (L) requires many tools and appliances to prevent delays and to reduce the amount of hand labor; estimated cost, $19,500.

The paint shop (K) is located in low ground, where much inconvenience is felt during the winter rains; the coppersmith and plumber shop (P) occupies space which should be used by the smithery; and the tin shop (R) is a temporary wooden structure, which is almost useless during the wet season. A new brick building (V), of two stories and fireproof construction, should be built at once to accommodate these three shops; estimated cost of fitting out this new building, $5,600.

A suitable plate rack (A-1) with overhead electric traveling crane should be provided in front of the shipfitters' shop; estimated cost, $4,500.

The joiner shop, boat shop, and block shop require additional tools to reduce the amount of hand labor now necessary; estimated cost, $6,200.

A drying kiln (Y) is an urgent necessity, as it is impracticable to obtain many kinds of seasoned lumber; estimated cost, $4,800.

Under the Department of Yards and Docks the following improvements are recommended:

The new brick building (V) described in paragraph 13.

An additional building (2) for the storage of lumber. At present much valuable material is stored in rough sheds, or is merely covered with canvas.

The smithery is dark and poorly ventilated, skylights in the roof are very necessary; skylights are also very desirable in the roofs of the other buildings of this department.

An additional dry dock (U) is absolutely necessary. One dock is not sufficient for the care and preservation of ships in commission and for the repair of ships in ordinary. It frequently occurs that a ship must occupy the dock for a month or more, during which period it would be impossible to dock another ship except at great additional expense and loss of time.

Additional wharfage room is very necessary, and the break in the present sea wall should be completed as soon as possible, so that there may be railroad connection along the entire water front.

RELATIVE URGENCY OF THE VARIOUS IMPROVEMENTS RECOMMENDED.

Construction and repair:
- Electric plant.
- Tools for smithery and foundry.
- Tools for shipfitters' shop.
- Tools for machine shop, joiner shop, etc.
- Drying kiln.
- Plate rack.

Yards and docks:
- New dry dock.
- New building for plumbers, painters, etc.
- New building for storage of lumber.
- Skylights.
- Additional wharfage.

Very respectfully,

WM. J. BAXTER,
Naval Constructor, U. S. N.

The COMMANDANT, *Navy Yard, Mare Island, Cal.*

NAVY-YARD, LEAGUE ISLAND, PA., *July 15, 1896.*

SIR: In compliance with the Bureau's letter No. 802-A, dated May 15, 1896, desiring a report embodying any suggestions relative to the improvement, alteration, or additions to the construction plant of this yard, I respectfully submit the following:

Upon making a thorough canvass of the plant and my reports of the last three years, I find that my report must in necessity be very much the same as my reports of the last two years. In 1894 I submitted a set of twelve plans. Referring to these plans and taking up the several proposed improvements in their order of immediate importance and classing them under the head of "immediate requirements" and "future improvements," I beg leave to invite attention to the immediate need of an engine and boiler house; also the urgent necessity of plate and angle furnaces, and a boat shop.

IMMEDIATE REQUIREMENTS.

Engine house.—In 1893 there was installed for running the iron-plating shop a 0-horsepower Corliss engine, which we have never been able to use, owing to the ct of it being covered by only a temporary wooden shed, and have been compelled keep the engine covered with tallow and burlap, for protection. This is a very ne piece of machinery and the shop is very much in need of its services. A new ilding, such as is shown on plan 2, is recommended, the estimated cost being ,800.

Boiler house.—The boilers (two in number) which were erected in 1893, and are to pply the sawmill and ship-fitting shop with power, are housed in a temporary ooden structure, which is very much cramped and dangerous in case of fire. It is erefore recommended that a building such as is shown on plan No. 3 be erected. his building, composed of angle and T-iron frame and corrugated iron, galvanized, r covering, is estimated can be put up for $3,400.

Furnaces.—This yard labors under a great disadvantage in not being provided ith angle and plate furnaces. Plans 10, 11, and 12 show general outlines of proosed angle and plate furnaces, similar to those used at Sparrow Point, and after a areful investigation of other furnaces I find this style best adapted to our uses. hese furnaces, including bending slabs, could be erected at a cost of about $13,800.

Boat shop.—The next in importance is a boat shop, and we certainly are laboring nder a great disadvantage with the present facilities in this line. There is no boat hop proper at this yard. The old frigate house has been utilized as a boat shop, but at onsiderable disadvantage as regards economy and dispatch of work. The building eing frame, and approximately 50 years old, can not last much longer at its best. lthough its supports have been looked after and repaired where found needed, and new floor laid to replace one that had become dangerous, the building is not safe s it should be. The boat shop located in the second story is unhandy for the admision and exit of boats; it is dark in the shop, and in winter is almost unbearable wing to the impossibility to heat this building with any degree of comfort. The anger of the building collapsing under a strong wind or being destroyed by fire is dvanced as a reason why it should be abandoned and a suitable place built where uman life and Government property would be safe. I therefore recommend the ection of a brick building 400 feet long by 65 feet wide, exterior dimensions, two ories high, to be located as shown on plan No. 1; the ground floor of this building be used as shown on plan No. 8 as a boat-building and repairing shop, and the rth end as cooper and block shops. The engine running the joiner shop is located ly 60 feet to the east of the proposed boat shop, and this engine is of sufficient pacity to run all the machine tools in the proposed shop. This building could be ected for $130,000.

The following additional tools are recommended to be purchased for this shop:

ne 16-inch screw-cutting lathe	$500
ne 20-inch screw-cutting lathe	800
ne Acme double-head screw-cutting machine	600
ne radial drill press, 60-inch	1,100
ne triple gear-shaping machine	400
ne 2 by 24 foot turntable turret lathe	1,000
ne hand-bending rolls 4 by 48 inches	100
ne centrifugal chip and waste cleaner	125
e multiple drilling machine	2,800
e grindstone, iron frame	80
e Detrick & Harvey open-side planer	3,000
e plate shearer, 8 inches between housing	4,000
e heavy vertical milling machine with angular motion	1,200
e small milling machine	300
e small drill press	100
e engine lathe	260
ree sets Morse twist drills ¼ to ½ inch	75
Total	16,510

The following tools and appliances under the proposed ship-fitting shed are recommended:

te and angle furnace	$9,000
ding slabs	4,800
draulic keel-plate bender	8,000
ks and cranes for picking plates	2,500
Total	24,300

FUTURE IMPROVEMENTS.

Ship-fitting shop.—As the work in this shop requires considerable handling from one machine to another while being worked, and the introduction of heavy armor for our modern ships necessitates the introduction of some permanent mode of lifting and carrying this work, I would, therefore, recommend the installation of an electrical traveling crane of 20 tons capacity; also an 80-horsepower generator for furnishing the power to this crane. I would further recommend that the framing for carrying this crane be built entirely separate from the main framing of the building. This could be accomplished by building box columns and stepping them on the same foundations as supporting columns of building. These columns would receive guides for carrying crane, and be securely tied to main columns with tie plates, making the whole a strong and safe construction.

Estimated cost of crane	$12,800
Estimated cost of generator, wiring, etc	2,550
Estimated cost of girders, etc	7,000
Total	22,350

Ship-fitting shed.—To carry on repairing upon ships at the wharves or in dock with dispatch and economy, a ship-fitting shed, as shown on plans 4 and 5, is recommended. The proposed structure is 274 feet by 100 feet and in close proximity to the ship-fitting shop; only iron and glass are used in its construction. The sides consist solely of sliding doors, each door sliding inside and outside of the posts. This arrangement is labor saving, in that it is possible to take work out of the building at any part of it with less handling than where doors are placed at certain intervals. Then, again, light and ventilation can be had to a greater extent, making it convenient for carrying on such work as can not be accommodated in a ship-fitting shop. It is suggested that under this shed should be located the furnaces and bending slabs, the scrive board, plate-pickling baths, hydraulic keel-plate bender, and such smaller tools as punches, shears, multiple drills, etc., as require considerable space when working long plates and angle bars.

It is further contemplated to place the brass foundry and tinning, plumbing, and galvanizing shops under the roof of the ship-fitting shed. The present brass foundry is located near the steam engineering building, and is not in a convenient place. The house is of frame; and as all the buildings in the yard ought to be made as nearly indestructible as possible, it is recommended that a new brass foundry be built upon the space designated on plan No. 4, to be constructed of the same material and uniform with the new boiler house proposed. Tinning and plumbing shops have been fitted up in the north end of the blacksmith shop and will suit the purpose for some years, but the most suitable location of these shops is undoubtedly that indicated on plan No. 4, incorporated under the ship-fitting shed.

I beg leave to urgently recommend an appropriation for this ship-fitting shed, as it must prove itself a great convenience for work that can not well be carried on in the ship-fitting shop, and would do away with the erection of detached shops and buildings, such as the boiler house, brass foundry, plumbing, tinning, and galvanizing shops. The estimated cost of this ship-fitting shed is $58,221. The cost of the proposed new boiler house is $3,400. Allowing $3,400 for each of the other two buildings, covering the brass foundry and the plumbing, tinning, and galvanizing shops, there is a total of $10,200. If these buildings were erected and in the course of time it is found desirable to erect a ship-fitting shed, then these buildings would have to be removed, and the first outlay would be an almost entire loss.

Smithery.—The present smithery is a frame building constructed about nineteen years ago. It is 254 by 40 feet and 20 feet high above the eaves. Four years ago this building was thoroughly repaired and is probably good for eight or ten years longer. The north end contains the engines and boilers, occupying 64 feet in length, next to which a space of 26 feet has been fitted up as a tinning, plumbing, and copper shop, leaving 191 feet for the smithery proper. This space accommodates 18 fires and 3 steam hammers of 200, 400, and 800 pounds, respectively. These hammers are very much out of date and of the slow-striking type. I would therefore recommend the purchase of two additional ones of 500 and 1,000 pounds, respectively. Estimated cost of hammers, $1,000.

I would also recommend canopies over each forge to carry off the smoke, which accumulates in great quantities when fires are started. Estimated cost of canopies, $650. The capacity for work is very limited, owing chiefly to the lack of heavy hammers, nor would it be possible to introduce any of the larger sizes, because of the limited space in every direction. The chief objection to this structure is the material of which it is built, and it would not be advisable to either enlarge it or introduce any very large hammers. While it is not likely that a suitable shop will

built for some years, I have anticipated such a contingency and outlined in a neral way my idea of a smithery capable of turning out all the work that may be manded from a thoroughly equipped navy-yard. Its proposed location is indicated plan No. 1, and general plans and arrangements are shown on plans Nos. 6 and 7. contemplates two separate shops, 400 feet in length, with an L at each end of 56 t, and 75 feet outside width.

These buildings are placed so as to form a quadrangle with a driveway of 20 feet tween them, giving access to the interior space between the buildings of 125 by 250 t. The engine and boiler houses are located in this courtyard. The west build- is to be used for heavy forging and angle smithery. It will contain four rever- atory furnaces, assorted heavy steam hammers, and an overhead traveling crane erated by electricity. To prevent as much as possible the accumulation of smoke, ich usually fills the shops in the mornings when fires are started, and during ggy weather when there is little draft, it is proposed to fit a canopy over each to which a pipe is attached, the latter communicating with a central flue run- g underground through the entire length of the shop out into the smokestack in yard. I believe that a suction of air through this main flue induced by fans uld greatly reduce if not entirely remove the dense smoke which otherwise uld have no outlet except through the roof, skylight, or open window. The east ilding is designed for general shipsmith work and contains 61 forges, steam ham- rs, and other appliances, and sufficient space for material required to be kept on nd for daily use. The estimated cost of these two smitheries is $310,000.

In conclusion, I beg leave to summarize the recommendations contained in this ter under "immediate requirements" and "future improvements," in the order their importance.

IMMEDIATE REQUIREMENTS.

Permanent building improvements.

gine house	$6,800
iler house	3,400
at shop and mold loft	130,000
Total	140.200

Tools and appliances.

ols for ship fitting	$16,540
rnaces	9,000
nding slabs	4,800
ckling tank	2,500
eam hammers	1,000
nopies over blacksmith's forges	650
Total	34,490

FUTURE IMPROVEMENTS.

Permanent buildings.

ip-fitting shed	$58,221
ithories	310,000
Total	368,221

Tools and appliances.

draulic keel-plate bender	$8,000
ectric motor plant	10,000
aveling crane for iron-plating shop	12,800
lumns and girders for carrying crane	7,000
nerators for furnishing power to crane	2,550
Total	40,350

RECAPITULATION.

Immediate requirements.

tal for permanent building improvements	$140,200
tal for tools and appliances	34,490
Sum total for immediate requirements	174,690

Future improvements.

Total for permanent building	$368,221
Total for tools and appliances	40,350
Sum total for future improvements	408,571

Very respectfully,

J. FEASTER,
Naval Constructor, U. S. N.

The COMMANDANT.

NAVAL CONSTRUCTOR'S OFFICE, UNITED STATES NAVY-YARD,
Portsmouth, N. H., July 20, 1896.

SIR: In compliance with the Bureau's order No. 802-A, dated May 15, 1896, to report "such suggestions relative to the improvements, alteration, or addition to the construction plant of this yard as will enable work to be performed more economically or more promptly," I have to submit the following, viz:

(1) The basement of building No. 14 is now used for a block shop, lignum-vitæ storeroom, engine room, and grindstone room. The floor timbers and plank floors of these rooms (except the engine room) are in very poor condition and need extensive repairs or to be made new. This room is very poorly lighted and too small for a block shop. On this floor is located a heavy double-surface planer, which, owing to its present location, is of little value. I would recommend this planer be retained on this floor; the planer moved; the line shaft changed to accommodate the planer; doors cut at each end of the building to allow a loaded team to pass through. By this change the planer would be so situated that much work that has to be done on the second floor of this building on a single-surface machine could be done at much better advantage in the basement on a double machine and directly from the load. The lignum-vitæ room, if needed, I would reduce in size. A lamp room should be fitted in this basement; also a water-closet for the accommodation of this building.

I would remove the machine, tools, and benches connected with the block shop to the first floor, now occupied by joiners' machinery, and convert that floor into a block shop and block storeroom, with plenty of light and power.

I would remove the cabinet shop from the attic of this building (No. 14) to the next floor below and convert that floor into a cabinet shop and cabinet varnish room by partitions running transversely of the building, using the attic for a furniture tr eroom.

I would remove the ship joiners and their machine tools out of this building (No. 14) and into the second floor of building No. 45, where there is a greater floor space on one floor than on the three floors combined as now arranged.

There is ample power from the engines in the ship fitters' department, located on the lower floor, for all purposes of joiners' department. This change would be in the interest of economy, and greatly so when but little work is being done, as the joiners' machinery and ship fitters' tools could be run by one engine, where it has to be done by two as now arranged, at an extra expense for firemen, engine tenders, and coal.

(2) The boilers at the smithery have had extensive repairs; have been in position since the early part of 1874; were built by the Nashua Iron and Steel Company, at a contract price for boilers and furnaces of $9,382.90.

Although the last report of the department of steam engineering states their condition as "good," I consider, owing to their age, they must be considered unreliable. I would not recommend their being replaced by the same type, as they are too expensive to run for the purpose required when used, and as the puddling furnaces are not used, a much cheaper boiler will answer the purpose.

I would recommend that a pair of 80-horsepower return tubular boilers be purchased to take the place of the present ones where needed.

(3) I would recommend that the ship fitter's shop in building No. 45 be piped for heating purposes.

(4) I also recommend that the second floor of building No. 45 (proposed joiner's shop) be piped for heating purposes.

(5) I would recommend that the air compressor and receiver, the automatic pump, the burners, and the piping be connected with the plate and angle furnaces in building No. 48, and the furnaces completed ready for use; that two stowage tanks be built and put in position for storage of fuel for heating furnaces.

(6) That a trolley be erected through the center of building No. 48, with the necessary branches to the punches and shears for handling plates and angles.

(7) I would recommend that a steam pipe be run underground, boxed, and covered with asbestus (or some other nonconducting material) from the boilers of the steel

plant, to the boat shop, and connected to the engine there, by so doing avoiding all danger of fire at that building.

(8) I would recommend that a beam shed be erected and completed, with the necessary forges for doing the required work of fitting and all the necessary appliances for handling steel or iron beams.

RECAPITULATION.

	Labor.	Material.	Total.
(1) Make repairs and changes in basement of building No. 14	$800.00	$350.00	$1,150.00
Convert first floor space above basement into a block shop and block storeroom	600.00	250.00	850.00
Convert the next floor space below the attic into a cabinet shop and varnish room	250.00	75.00	325.00
Move joiner's department from building No. 14 to second floor of building No. 45, and convert that floor space into a joiner shop	850.00	550.00	1,400.00
Total	2,500.00	1,225.00	3,725.00
(2) Prepare two tubular boilers, 80 horsepower, for smithery	.....	.....	1,800.00
Total	.....	.....	1,800.00
(3) Piping building No. 45 for heating lower floor	250.00	270.00	520.00
Total	250.00	270.00	520.00
(4) Piping building No. 45 for heating upper floor	300.00	325.00	625.00
Total	300.00	325.00	625.00
(5) Pipe furnaces in building No. 48 and set up compressor, automatic pump	650.00	200.00	850.00
Tanks for stowage of fuel	1,350.00	970.00	2,320.00
Total	2,000.00	1,170.00	3,170.00
(6) Erecting trolley with branches in building No. 48	450.00	400.00	850.00
Total	450.00	400.00	850.00
(7) Running steam pipe to boat shop from boiler of steel plant	500.00	200.00	700.00
Total	500.00	200.00	700.00
(8) Preparing beam shed	1,300.00	2,200.00	3,500.00
Total	1,300.00	2,200.00	3,500.00

GRAND RECAPITULATION.

	Labor.	Material.	Total.
First	$2,500.00	$1,225.00	$3,725.00
Second	.....	1,800.00	1,800.00
Third	250.00	270.00	520.00
Fourth	300.00	325.00	625.00
Fifth	2,000.00	1,170.00	3,170.00
Sixth	450.00	400.00	850.00
Seventh	500.00	200.00	700.00
Eighth	1,300.00	2,200.00	3,500.00
Grand total	7,300.00	7,590.00	14,890.00

Respectfully submitted.

WILLIAM F. NOYES,
Master Shipwright, in Charge.

The COMMANDANT.

[First indorsement.]

NAVY-YARD, *Portsmouth, N. H., July 20, 1896.*

Respectfully forwarded to Bureau of Construction and Repair, approved, with the exception of the second item, which is an estimate of $1,800 for new boilers for the smithery.

The chief engineer of the yard, in his quarterly report of steam generators, states that these boilers are in fair condition.

Such being the fact, they can, in my opinion, be utilized advantageously for some time in the future.

GEO. C. REMEY,
Captain, U. S. N., Commandant.

U. S. NAVY-YARD, *Boston, Mass., July 3, 1896.*

SIR: Referring to Bureau Construction and Repair letter No. 802–A, dated May 15, 1896, requesting a report from the naval constructor, embodying any suggestions relative to improvement, alteration, or addition to the construction plant of this yard, etc., would report:

I would recommend that the changes, additions, etc., embodied in reports of Naval Constructor Wilson and General Foreman Hichborn on the same subject, and contained in Annual Report of the Chief of the Bureau of Construction and Repair for the fiscal year ended June 30, 1895, pages 83 to 87, be carried out.

Very respectfully,

H. W. LYON,
Commander, U. S. N., Head of Department of Construction and Repair.

The COMMANDANT.

Circular defining chief characteristics of battle ships *Illinois*, *Alabama*, and *Wisconsin*.

SEAGOING COAST-LINE BATTLE SHIPS ILLINOIS, ALABAMA, AND WISCONSIN.

In the act of Congress making appropriations for the naval service for the fiscal year ending June 30, 1897, approved June 10, 1896, provision is made, under "Increase of the Navy," for three seagoing coast-line battle ships, to cost, exclusive of armament, not more than $3,750,000 each.

In determining whether cost is above or below the limit there is included in the cost of armament, besides the guns, ammunition, etc., all armor protecting directly guns and loading positions, such as turret and barbette armor, casemate armor protecting guns, etc.

These vessels are to be built under the provisions of the act of August 3, 1886, entitled "An act to increase the naval establishment," as to materials for said vessels, their engines, boilers, and machinery, except as to premiums, which are not to be offered, save that in all their parts said vessels shall be of domestic manufacture.

The appended extracts from the act authorizing these vessels show the various conditions as to number of vessels that may be built by one party, localities of construction, etc.

Under the law the contracts for the construction of these vessels must be made on or before October 8, 1896.

The Department, in advertising for these vessels to be built by contract, will invite proposals under two classes, viz:

Class 1.—For the construction of the hull and machinery, including engines, boilers and appurtenances, equipment, except anchors and chains, and for the installation of ordnance and ordnance outfit, complete in all respects, in accordance with the plans and specifications provided by the Secretary of the Navy.

Class 2.—For the construction of the hull and the machinery, including engines, boilers, and appurtenances, equipment, except anchors and chains, complete in all respects, in accordance with plans and specifications submitted by the bidder, and for the installation of ordnance and ordnance outfit, in accordance with the requirements of the Department.

Bidders may, if they so desire, adopt the plans and specifications of the Department for the hull and machinery, or any part of either, and embody them in their plans and specifications to be submitted with their proposals.

In order that ample time may be given all ship and marine-engine builders who may desire to submit their own plans of the hull and machinery, or of either, this circular defining the general requirements of the vessel is issued now. Further, all designs of machinery must fulfill certain general requirements of the Department, regarding which all necessary information will be supplied on application to the Bureau of Steam Engineering.

Any design of the vessel submitted must be in such detail and accompanied by such plans, specifications, and calculations as to enable the Department to readily determine its value, and ascertain whether it fulfills the herein-mentioned general requirements; the calculations to include complete calculations of weights, displacement and range of stability under the conditions of normal displacement, deep-load displacement, and light displacement; such calculations as will determine the

extent of injury above and below the armored deck which may be suffered while retaining satisfactory buoyancy and stability, and also such calculations as will demonstrate the satisfactory strength of the whole structure.

The specifications submitted by the bidders under class 2 must cover fully the ground covered by the Department's specifications. Copies of the Department's specifications will be furnished, in which bidders must show by erasures and additions the exact nature of the hull and machinery, including engines, boilers, and equipment, complete in all respects, that they propose to build.

It is contemplated in the Department's design to drive the vessel by twin screws. The engines to be of the vertical triple-expansion type, two in number—one on each shaft—and in two compartments. The boilers to be single-ended, eight in number, and placed in four compartments.

Any alternate design of machinery submitted by bidders must fulfill the general requirements contained in the "Specifications to be followed by contractors for machinery," issued by the Bureau of Steam Engineering. Such design must be accompanied by specifications in sufficient detail to enable the strength of the principal parts and the probable efficiency of the whole design to be readily determined. Further, all designs must be accompanied by calculations showing in detail the total weight and position of center of gravity of all machinery, the former not to exceed the weight assigned in this circular if it is proposed to adopt the Department's design of hull.

The following elements and qualities are obtained and provided for in the Department's design, and their equivalent must be obtained and provided for in all designs submitted:

(1) The speed to be maintained at sea for four consecutive hours, under conditions to be prescribed by the Secretary of the Navy, is to be not less than an average of 6 knots an hour.

(2) The hull is to be of steel, not sheathed, with double bottom and close watertight subdivision.

The arrangements of decks above water are to provide ample free-board and berthing accommodations.

It is contemplated to fit two military masts with fighting tops, to carry no sail. The boats are to be stowed clear of the blast of the guns; but two lifeboats, to be so carried as to be rapidly lowered under all conditions of weather.

(3) The protection of the hull against injury to the water-line region is to be afforded by means of a side armor belt of a maximum thickness of not less than 16½ inches and a mean depth of 7 feet 6 inches, the belt to extend at least from the stem to the after barbette, and to maintain the maximum thickness throughout the engine and boiler spaces; from thence forward it may be tapered gradually to a uniform thickness of 4 inches. The transverse armor at the after end of the belt and just forward of the boiler will be not less than 12 inches in thickness. Barbettes for 13-inch guns will have armor 15 inches thick, except in the rear, where it will be reduced to 10 inches. The turret armor is to be 17 inches thick in front and 15 inches elsewhere. The ship's side, from the armor belt to the main deck, will be protected by not less than 5½ inches of steel armor from barbette to barbette. Coal is to be carried back of a portion of this 5½-inch casemate armor.

A protective deck is to extend throughout the length of the vessel. Where this deck is worked flat the total thickness will not be less than 2½ inches, and where worked with inclined sides the slopes will be 3 inches in thickness forward and 5 inches in thickness aft. A cellulose belt is to be fitted along the sides the whole length of the ship.

A conning tower of not less than 10 inches in thickness, having an armored communication tube not less than 7 inches in thickness, will be carried in a suitable commanding position forward, the tube extending to the armor deck and affording protection to the voice tubes, bell wires, etc. An additional armored station will be fitted aft, having armor not less than 6 inches in thickness.

In wake of the 6-inch guns on the main deck there is to be continuous armor 4½ inches thick extending between the turrets. Further protection is to be afforded by 1½-inch splinter bulkheads between the guns, extending from deck to deck.

The 6-inch guns on the upper deck will also be protected by 5½-inch armor, with 1½-inch splinter bulkheads between guns.

Protection is to be afforded the smaller guns by shields and extra side plating.

(4) The battery of the vessel is to be—

Four 13-inch B. L. R guns.
Fourteen 6-inch rapid-fire guns.
Sixteen 6-pounder rapid-fire guns.
Four 1-pounder rapid-fire guns.
Four machine guns.
One field gun.

The supply of ammunition is to be as follows:

	Rounds.
13-inch ammunition	200
6-inch ammunition	2,800
6-pounder ammunition	10,000
1-pounder ammunition	2,400

The following stowage space for ammunition is required:

Kind of ammunition.	Number of rounds	Number of rounds in each box.	Number of boxes.	Dimensions of each box.		
				Height.	Breadth.	Length.
				Inches.	*Inches.*	*Inches.*
6-inch charge	2,800	1	2,800	8	8	44
6-pounder Hotchkiss	9 999	11	909	16.90	10.65	21.50
1-pounder Hotchkiss	2,400	60	40	14.50	10.20	22.75
6-pounder saluting cartridges	297	11	27	9⅜	9⅜	18⅜
6-pounder drill cartridges	100	10	10	9⅜	9⅜	18⅜
Saluting charges in 2-pound bags stowed in tanks	1,700	95	18	22½	16½	16½
.45 caliber ball cartridges	208,000	1,000	208	8½	15½	14
.22-caliber cartridges	109,000	1,000	109	9½	16½	9
.38 caliber ball cartridges	36,000	3,000	12	9½	14½	9

One 6-inch projectile, ready for stowage, has the capacity of a cylinder 22.5 inches long and 7.8 inches diameter.

One 13-inch projectile requires a space equal to a cylinder whose diameter is 13.2 inches and length 48 inches.

One cylindrical powder tank, to hold one-half of a full charge, is about 43 inches long and 18½ inches diameter.

Eight torpedoes about 17 feet long, 17.7 inches diameter.

In addition to the above, there will be required about 190 cubic feet for the stowage of the submarine mining outfit.

(5) The torpedo outfit is to consist of four broadside tubes, eight torpedoes, and suitable allowance of gun cotton for mines and miscellaneous purposes. The torpedo tubes will be placed two on each broadside.

(6) Provisions and small stores are to be carried for three months. Distilling apparatus and evaporators will be fitted for fresh-water supply—the allowance fo water to be carried to be sufficient for fifteen days, besides water for sanitary purposes. Clothing, contingent and small stores to be carried in sufficient quantities for the service of the ship for one year.

(7) It is contemplated, as previously stated, to drive the vessel by twin screws. The engines are to be of the vertical triple-expansion type, two in number, in two separate compartments. The boilers are to be of the cylindrical single-ended pattern, eight in number, placed in four compartments. The weight of propelling machinery, including water and stores, should not exceed 1,133 tons.

Alternate machinery must fulfill the general requirements before referred to.

(8) The total coal-bunker capacity is to be such that at least 1,200 tons can be carried with loose stowage without trimming by hand.

(9) The electric lighting plant is to consist of three units, each unit having engine, dynamo, and combination bedplate, and each dynamo having a rated output of 400 amperes at 80 volts. The total weight of the three units complete should not exceed 31,500 pounds. The total weight of the whole electric installation, including dynamos, engines, bedplates, all fittings, wiring, and stores, and four search lights, should not exceed 50 tons.

General dimensions of Department design.

Length on load water line (normal displacement)	feet	368
Molded breadth at load water line	do	72
Mean draft at normal displacement	do	23½
Normal displacement (about)	tons	11,500
Total coal capacity, loose stowage	do	1,200

Principal weights carried.

ORDNANCE.

	Tons.
Four 13-inch B. L. R. and mounts; fourteen 6-inch R. F. G. and mounts	533
Sixteen 6-pounders, four 1-pounders, four machine guns, one field gun	17
200 rounds 13-inch ammunition	161

	Tons.
rounds 6-inch ammunition	212
nder, 1-pounder, machine, etc., ammunition	63
edo outfit, stores, and equipment	25
inery complete	1,133
pment weights, including electric plant	175
et-turning machinery, complete installation	90
s and outfit	24
s and spars	40
ers, crew, and effects	75
isions and clothing	125
llaneous stores and water	85
mplement, officers and men (about), 490.	

o-thirds of total coal plus two-thirds of full ammunition plus two-thirds of stores must be carried at the normal displacement of 11,500 tons.

on trial the average speed shall equal or exceed a speed at sea of 16 knots our for four consecutive hours the vessel will be accepted in so far as the speed ncerned. If the speed falls below 16 knots and exceeds 15 knots per hour the l will be accepted at a reduced price, the reduction being at the rate of $25,000 uarter-knot deficiency of speed from 16 knots to 15½ knots, and at the rate of 00 per quarter-knot deficiency of speed from 15½ knots to 15 knots. If the l falls below 15 knots per hour, the vessel will, in the discretion of the Secre- of the Navy, be rejected, or accepted at a reduced price to be agreed upon een the Secretary and the contractors. In case of rejection any money that have been paid to the contractors on account shall be refunded.

e work of constructing these vessels will be done in accordance with this cir-, the advertisement to be published hereafter, and the plans and specifications furnished or adopted by the Department, but in any case where there may be crepancy between said specifications and this circular the specifications shall ail.

PHILIP HICHBORN,
Chief Constructor, U. S. N., Chief of Bureau.

rcular defining the chief characteristics of three 30-knot torpedo s and other torpedo boats for the United States Navy.

the appropriation for the naval service for the fiscal year ending June 30, 1897, oved June 10, 1896, provision is made under "Increase of the Navy" for 3 tor- boats to cost in all not exceeding $800,000, and not to exceed 10 torpedo boats st in all not exceeding $500,000. The boats are to be built under the provisions e act of August 3, 1886, entitled "An act to increase the Naval Establishment," materials for said boats, their engines, boilers, etc., except as to premiums, h are not to be offered, save that in all their parts said boats shall be of domes- anufacture.

e appended extracts from the act authorizing these boats show the various con- ns as to number of boats that may be built by one party, localities of construc- etc.

der the law the contracts for the construction of these boats must be made on fore October 8, 1896.

e Department in advertising for the boats of 30 knots' speed to be built by con- will invite proposals for the construction of the hull and machinery, including nes, boilers, and appurtenances and equipment, complete in all respects, in rdance with the plans and specifications provided by the bidder. For the other proposals will be invited for two types of boats, as hereinafter described. her information needed in the preparation of designs of these boats will be fur- d by the Bureau of Construction and Repair, and information as to machinery be furnished by the Bureau of Steam Engineering, Navy Department, Wash- n, D. C.

THREE TORPEDO BOATS OF 30 KNOTS SPEED.

e following elements and qualities must be obtained in the designs:

e average speed to be maintained for one hour, under conditions to be pre- ed by the Secretary of the Navy, must not be less than 30 knots.

e boats are to be built and fitted complete for sea by the contractors, with the tion of sea stores and of the ordnance and ordnance outfit of all kinds, which, ver, will be fitted and secured in place by the contractors; that is, the con- ors furnish small boats, furniture of all kinds, electric plant, anchors, cables, , rigging, awnings, ridge ropes, hatch hoods, galleys and furniture for galleys

of all kinds, and will fit and secure in place all ordnance and ordnance outfit. Information as to dimensions, weight, and approximate cost of ordnance appliances to be supplied by the Government is appended.

Two conning towers will be placed in convenient positions, one forward and the other aft.

The spaces allowed for torpedo tubes, the torpedoes and appurtenances, and rapid-firing guns are to be shown on the plans of designs submitted. Accommodations will be provided for four commissioned officers and an adequate crew.

An incandescent electric lighting plant must be fitted, but no searchlight will be required. Bidders must specify in their proposals the weights additional to that of complete hull and machinery that they propose to carry on trial, such as torpedo gear and torpedoes, rapid-firing guns and ammunition, coal, crew, boats, anchors, cables, electric plant, furniture, equipment, spare parts, stores, etc.; also the total coal capacity of bunkers.

Any and all designs submitted must be accompanied with complete plans and specifications for building, and such calculations of weight, displacement, and stability as will demonstrate the satisfactory strength and stability of the whole structure.

If bidders desire to modify the specifications for steel material prepared by the Department, they must submit with their bids full statement of the modifications proposed.

If on trial the average speed of each boat shall equal or exceed 30 knots for one hour, the boat will be accepted in so far as the speed is concerned. In case of rejection, any money that may have been paid to the contractors on account shall be refunded.

Torpedo boats to cost not exceeding $500,000.

The exact number, size, and speed of these boats not being fixed in the act of Congress, the Department will entertain bids for boats of two separate types and will invite proposals as follows, provided always that the total cost of the boats, including ordnance, not to be supplied by the bidder, will not exceed $500,000:

Type No. 1.

Class 1.—For the construction of the hull and machinery, including engines, boilers and appurtenances, and equipment, complete in all respects, in accordance with the plans and specifications provided by the Secretary of the Navy.

Class 2.—For the construction of the hull and machinery, including engines, boilers and appurtenances, and equipment, complete in all respects, in accordance with the plans and specifications provided by the bidder.

Bidders may, if they so desire, adopt the plans and specifications of the Department for the hull or machinery, or any part of either, and embody them in their plans and specifications to be submitted with their proposals.

In order that ample time may be given for the preparation of plans, this circular is issued to ship and engine builders who may desire to submit designs.

The following elements and qualities must be obtained in the designs:

The average speed to be maintained for two consecutive hours, under conditions to be prescribed by the Secretary of the Navy, must not be less than 20 knots per hour.

The boats are to be built and fitted complete for sea by the contractors, with the exception of sea stores, ordnance and ordnance outfit of all kinds, which, however, will be fitted and secured in place by the contractors—that is, the contractors are to furnish small boats, furniture of all kinds, anchors, cables, masts, rigging, awnings, ridge ropes, hatch hoods, galleys, and furniture for galleys of all kinds, etc., fitted and secured in place.

Two conning towers or sighting hoods will be placed in convenient positions, one forward and one aft.

The freeboard forward to be not less than 4 feet 3 inches. The spaces allowed for torpedo tubes, the torpedoes and appurtenances, and rapid-firing gun are to be shown on the plans of designs submitted.

Accommodations must be provided for two officers and an adequate crew.

The boat on her trial trip for speed must carry the following weights additional to that of the completed hull, machinery, and spare parts:

	Tons.
Torpedo gear and torpedoes Rapid-firing guns and ammunition	3½
Coal	5
Crew, boats, anchors, furniture, equipment, etc	4
Total	12½

coal capacity must be at least 16 tons of 43 cubic feet per ton.
and all designs for these boats submitted must be accompanied with complete and specifications for building, and such calculations of weight, displacement, ability as will demonstrate the satisfactory strength of the whole structure.
idders desire to modify the specifications for steel material prepared by the tment, they must submit with their bids a full statement of the modifica- proposed.
designs of machinery submitted must fulfill the general requirements to be by the Bureau of Steam Engineering. Such designs must be accompanied awings and specifications in sufficient detail to enable the strength of the prin- parts and the probable efficiency of the whole design to be readily determined. er, all designs must be accompanied by detailed calculations for the weight osition of center of gravity of all machinery.

General dimensions (approximate only).

h on load line	feet..	105
on load line	do...	12½
draft	do...	4½
acement (about)	tons..	68
P. (about)		850
per hour	knots..	20

Armament.

	Tons.
ingle deck-torpedo guns -pounder rapid-firing gun utomobile torpedoes unds 1-pounder ammunition	3½

n trial the average speed of the boat shall equal or exceed 20 knots per hour o consecutive hours, the boat will be accepted in so far as the speed is concerned. speed falls below 20 knots per hour, and exceeds 19 knots, the boat will be ted at a reduced price, the reduction being at the rate of $10,000 per knot speed 20 knots. If the speed falls below 19 knots per hour, the boat will, in the tion of the Secretary of the Navy, be rejected, or accepted at a reduced price mutually agreed upon between the Secretary and the contractors. In case of ion, any money that may have been paid to the contractors on account shall unded.

Type No 2.

Department will invite proposals for boats of this type under Class 2 only.
following elements and qualities must be obtained in the design:
average speed to be maintained for two consecutive hours, under conditions prescribed by the Secretary of the Navy, must not be less than 22½ knots per

boats are to be built and fitted complete for sea by the contractors, with the tion of sea stores and ordnance and ordnance outfit of all kinds, which, how- will be fitted and secured in place by the contractors; that is, the contractors h small boats, furniture of all kinds, anchors, cables, masts, rigging, awnings, ropes, hatch hoods, galleys, and furniture for galleys of all kinds, fitted and d in place.
conning towers or sighting hoods will be placed in convenient positions, one rd and one aft.
spaces allowed for torpedo tubes, the torpedos and appurtenances, and rapid- guns are to be shown on the plans of designs submitted.
ommodations must be provided for four commissioned officers and an adequate

eral plans of a boat of this type may be seen at the Bureau of Construction epair, Navy Department.
boat on her trial trip for speed must carry the following weights additional t of the completed hull, machinery, and spare parts:

	Tons.
do gear and torpedoes -firing guns and ammunition	6.4
	6
boats, anchors, furniture, equipment, etc	7.6
Total	20

coal capacity must be at least 25 tons of 43 cubic feet per ton.

Any and all designs for these boats submitted must be accompanied with complete plans and specifications for building and calculations of weight, displacement, and stability; also such calculations as will demonstrate the satisfactory strength of the whole structure. If bidders desire to modify the specifications for steel material prepared by the Department, they must submit with their bids full statement of the modifications proposed.

The designs of machinery submitted must fulfill the general requirements to be issued by the Bureau of Steam Engineering. Such designs must be accompanied by drawings and specifications in sufficient detail to enable the strength of the principal parts and the probable efficiency of the whole design to be readily determined. Further, all designs must be accompanied by detailed calculations for the weight and position of the center of gravity of all machinery. Designs for this machinery may be obtained upon application to the Bureau of Steam Engineering, Navy Department.

General dimensions (approximate only).

Length of load line	feet..	140
Beam on load line	do...	14½
Mean draft	do...	4½
Displacement (about)	tons..	105
I. H. P. (about)		1,700
Speed per hour	knots..	22½

Armament.

	Tons.
Three single deck-torpedo guns Three 1-pounder rapid-firing guns Four automobile torpedoes 540 rounds 1-pounder ammunition	6.4

If on trial the average speed of the boat shall equal or exceed 22½ knots per hour for two consecutive hours, the boat will be accepted in so far as the speed is concerned. If the speed falls below 22½ knots per hour, and exceeds 21½ knots, the boat will be accepted at a reduced price, the reduction being at the rate of $10,000 per knot speed below 22½ knots. If the speed falls below 21½ knots per hour, the boat will, in the discretion of the Secretary of the Navy, be rejected, or accepted at a reduced price mutually agreed upon between the Secretary and the contractors. In case of rejection, any money that may have been paid to the contractors on account shall be refunded.

PHILIP HICHBORN,
Chief Constructor, U. S. N., Chief of Bureau of Construction and Repair.

INCREASE OF THE NAVY.

That for the purpose of further increasing the naval establishment of the United States the President is hereby authorized to have constructed by contract three seagoing coast-line battle ships designed to carry the heaviest armor and most powerful ordnance upon a displacement of about eleven thousand tons, to have the highest practicable speed for vessels of their class, and to cost, exclusive of armament, not exceeding three million seven hundred and fifty thousand dollars each; and three torpedo boats to have a maximum speed of not less than thirty knots, to cost in all not exceeding eight hundred thousand dollars; and not to exceed ten torpedo boats to cost in all not exceeding five hundred thousand dollars, and to have the highest practicable speed for vessels of their class; and not more than two of said battle ships and not more than three of said torpedo boats shall be built in one yard or by one contracting party, and in each case the contract shall be awarded by the Secretary of the Navy to the lowest best responsible bidder; and in the construction of all said vessels all of the provisions of the Act of August third, eighteen hundred and eighty-six, entitled "An act to increase the naval establishment," as to materials for said vessels, their engines, boilers, and machinery, the contract under which they are built, except as to premiums, which are not to be offered, the notice of any proposals for the same, the plans, drawings, and specifications therefor, and the method of executing said contracts, shall be observed and followed, and said vessels shall be built in compliance with the terms of said Act, save that in all their parts said vessels shall be of domestic manufacture; and, subject to the provisions hereinafter made, one and not more than one seagoing battle ship and three of said torpedo boats shall be built on or near the coast of the Pacific Ocean or in the waters connecting therewith, provided that said battle ship or torpedo boats can be constructed at an additional cost not exceeding four per centum of the lowest accepted bid for the other

ships or torpedo boats provided for in this Act, and one torpedo boat on the ippi River, one torpedo boat on the coast of the Gulf of Mexico and one tor- oat on the Missouri River: *Provided*, That if it shall appear to the satisfaction President of the United States, from the biddings for such contracts when the re opened and examined by him, that said vessels can not be constructed at a st on or near the coast of the Pacific Ocean, on the Mississippi or Missouri or the Gulf of Mexico, he shall authorize the construction of said vessels, or of them, elsewhere in the United States, subject to the limitations as to cost before provided: *Provided further*, That the contracts for the construction of sels herein provided for shall be made within one hundred and twenty days he passage of this Act.

APPENDIX.

manipulating 6-pounder rapid-firing guns a radius of 87 inches in the clear he pivot should be allowed in all cases, and for 1-pounder guns a radius of 68

weights of the rapid-firing guns are as follows:

	Pounds.
der R. F., complete, with mount	1,950
der R. F., complete	450
nds of 6-pounder ammunition, boxed	1,206
nds of 1-pounder ammunition, boxed	252

dimensions and capacity of the ammunition boxes are as follows:
nder ammunition, 21.5 by 16.88 by 10.63 inches; capacity, 11 rounds.
nder ammunition, 22.75 by 14.50 by 10.20 inches; capacity, 60 rounds.
allowance of ammunition per gun is 180 rounds for the 1-pounder and 198 for the 6-pounder.
re a spare torpedo is carried it will be stowed on deck in a case. The other oes will be stowed in the tubes.
general dimensions and weight of the tubes and torpedoes are, approxi-

h of tube over all	inches	240
h from rear end of tube to pivot	do	100
h from forward end of spoon to pivot	do	140
ter of tube over flanges	do	24
ter of deck circle	do	30
h of torpedo	do	197
st diameter of torpedo	do	17.7
t of one launching tube and mount	pounds	2,000
t of one torpedo and exercise head	do	1,500
t of air-compressing plant for two tubes	do	1,200
t of air-compressing plant for three tubes	do	1,400
t of torpedo case	do	300

Approximate cost of ordnance.

pounder gun and mount, complete	$2,250.00
pounder gun and mount, complete	810.00
rpedo tube, complete	2,000.00
rpedo case	300.00
npressing plant for two torpedo tubes	1,700.00
npressing plant for three torpedo tubes	2,200.00

RT OF THE BOARD ON METHOD OF FITTING ARMOR AND BACKING TO NAVAL VESSELS.

NAVY DEPARTMENT,
Washington, D. C., January 23, 1896.

In obedience to your order of April 6, 1895, appointing us a board for the e of considering and reporting upon the details of the best method of fitting and backing to naval vessels, and the appliances which may be required in cution of the work in the most efficient, economical, and expeditious manner, e carefully considered the report on this subject dated February 27, 1891, of

the board of which Chief Constructor Philip Hichborn, U. S. N., was president, together with all information obtained from the Bureaus of Ordnance and of Construction and Repair, from naval constructors stationed at the various navy-yards and private shipyards, from experiments conducted by, or at the request of, the board, and from other sources, and have the honor to make the following report:

WOOD BACKING.

The board considers wood backing necessary in most cases, both for the purpose of insuring a good fit of the armor and to provide a sufficient length of armor bolt; but the backing should be made as thin as possible consistent with accomplishment of these objects. For turrets the board considers the proper finished thickness to be about 3 inches, and for side, belt, and diagonal armor about 5 inches. The best material for wood backing is deemed to be East India teak.

The inner surface of the backing and the outer surface of the plating behind armor should be thoroughly coated with red lead or approved waterproofing composition before the backing is fitted.

The backing should be thoroughly calked with oakum and the seams payed with approved waterproofing composition.

Before applying the armor the outer surface of the backing and the inner surface of the armor should be well coated with red lead or approved waterproofing composition.

In preparing the wood backing, it should be worked about 1 inch full, or more if the plates are greatly warped. The excess in thickness is to be carefully removed after the armor is received, and the backing made to fit the armor exactly by means of molds taken directly from the latter.

BACKING BOLTS.

The backing should be secured by galvanized iron or steel bolts three-fourths of an inch in diameter, as shown in Plate No. 1.

The heads of these bolts should be sunk about 1 inch below the finished surface of the backing, and covered by wooden plugs driven in red lead or waterproofing composition. Hempen grommets, saturated with red lead, should be placed under the washers of the nuts on the inner ends of the bolts.

The joint between the two thicknesses of the double plating should be carefully calked, three $\frac{3}{4}$-inch rivets being driven around each bolt hole to enable this to be properly done, as shown in Plate No. 1.

There should be two bolts on each side of every butt. The spacing of the remaining bolts of each piece of backing will depend somewhat upon the sizes of the pieces of backing, and the spacing of the framing behind armor, but in general these bolts should be spaced not less than 3 feet or more than 5 feet.

METHOD OF FITTING ARMOR PLATES.

The board recommends that the maximum variations to be allowed in the dimensions of oil tempered and annealed plates be fixed as follows:

In length, less one-fourth inch, more 0;

In width, less one-fourth inch, more 0;

In thickness, less one-eighth inch, more three-sixteenths inch;

In the versed sine of curves, three-sixteenths inch, more or less, per yard of chord, but not in any case to exceed one-fourth inch in any 10 feet of arc.

In hollow armor forgings, when machined, one-sixteenth of an inch in thickness on a side, inside and outside; the tolerance in length to be the same as in plates.

In hollow forgings, such as conning towers, when not machined, thickness of wall one-half inch more or less so distributed that while either inside or outside radius may vary one-half inch the sum of the variations of both radii shall not exceed one-half inch.

Greater variations than the above may be allowed in face-hardened armor when found necessary.

Special attention is called to the desirability, and, in turrets, to the imperative necessity of fitting the butts of the plates metal to metal. Where the joints do not fit accurately at all points, and the space in the joint does not exceed the maximum allowed variations, the back of the space should be filled in with a cement of approved composition similar to that used in making "rust joints." At the outer surface, metal "shim pieces" should be driven into the space left in the joint, and calked on their outer edges flush with the face of the armor.

It is recommended that after all work of fitting side, belt, and diagonal armor plates to the ship is completed, the space between the armor and the backing plates be completely filled with thick red lead and oil under a hydraulic head of not less than 4 feet.

DRAWINGS, TEMPLATES, AND MODELS.

following drawings should be made at the yard where the ship is being built
rnished to the armor contractors, viz:
General plans.—To be on a scale of one-fourth of an inch to the foot, and to the general arrangement of the armor, giving the location of the butts and of each plate, and the approximate position of holes for armor bolts; general sions only to be given.
Forging plans.—To be on a scale of one-half inch to the foot, showing each plate separately, giving principal dimensions of all plates that are not dupli- f each other, the number of plates of each shape that is required, and the sched- arks and calculated weight of the plates. These plans must indicate, in a l manner, all machine work which should properly be performed by the armor ctors.
se plans, together with the general plans (*a*) are to be considered merely as pre- ry plans, and should be furnished at the earliest possible date, to enable the contractors to begin their work.
Detail plans.—To be on a scale of one inch to the foot, a separate plan for each plate, giving all its dimensions, bevelings of butts and edges, and positions of bolts, with a schedule showing the number of such bolts and their diameters, s, and angles with inner face of armor.
position of each armor bolt should be given by the distances from the edges plates to the point where the axis of the bolt pierces the inner surface of the these distances to be measured on such actual curved inner surface of the

dimensions for these plans should in general be obtained by taking measure- from molds erected in place on the ship.
detailed plans of the middle plates on each side of the ship should be retained yard where the ship is building until all other plates are in position, and then ted as found necessary, so that the last plate may fit as exactly as possible. neral order of putting on the plates should be to work from the forward and nds of the side armor belt toward the middle plates, and on both sides of the qually.
ase the armor contractors consider the plans above described inadequate, they equire the shipyard to furnish templates, and for plates of specially irregular models. Such templates and models should be strongly made of well-seasoned thoroughly shellacked; they should be provided with check marks and straight lines, and should be accompanied by drawings on a scale of 1 inch to the ade by measurement from the templates and models themselves, and showing limensions and also all check marks and check lines, so as to reveal at once stortion of templates or models that may have occurred. In case of discrep- etween templates or models and such drawings, the latter are to be considered standard to which the plates must conform.
r each lot of armor is finally set up for acceptance at the works of the armor ctors, the latter should be required to make a plan, showing such armor as set th suitable check marks on the armor and on the plans to facilitate setting the up in place on the ship. These plans should be furnished to the yard where ssel is being built.

SIZES OF ARMOR BOLTS.

board recommends that the following sizes of armor bolts be adopted, and that e employed in connection with armor of the thickness given in the following the "size" of the bolt in each case being the diameter of the reduced shank:

Size of bolts.	Thickness of armor.
1.5 inches	To and including 5 inches.
2 inches	From 5 to 9 inches, inclusive.
2.4 inches	From 9 to 13 inches, inclusive.
2.8 inches	From 13 to 17 inches, inclusive.
3.2 inches	From 17 to 21 inches, inclusive.

"schedule length" to be employed in designating the length of these bolts is gth of the reduced shank, and is to be taken as equal to the thickness of wood g plus thickness of backing plates plus one-fourth inch, as stated on the plans bolts hereto appended. Where the inner surface of the armor is not parallel plating behind armor, the armor plate is to be counterbored at each bolt

hole, so that the full length of the threaded portion of the bolt may be in the plate, the diameter of such counterbore being equal to that of the hole through the backing. In such cases the "thickness of backing" to be used in determining the "schedule length" is to be considered as equal to the distance from outer surface of backing plate to bottom of counterbore in armor.

SPACING OF ARMOR BOLTS.

The board recommends that armor bolts be so spaced as to provide one bolt for every 5 square feet of surface of armor, so far as the framing behind armor will permit, except in the case of 3-inch armor, for which the number of square feet of armor per bolt should be about 6. The center of an armor-bolt hole should never be less than three and one-half times its own diameter from the edge of the plate.

BOLTS FOR ARMOR WITH WOOD BACKING.

Specially careful consideration has been given to the type of bolt for securing the side, belt, diagonal, and turret armor plates, and a bolt, much simpler than the one in present use, and in our judgment equally as effective, is recommended for adoption. The length of reduced shank is in each case made as great as possible, the usual rubber, plate, and cup washers on the inner end are replaced by a single lead washer, and the extension sleeves and double reduced shanks, at present employed in some cases, are entirely dispensed with.

SIDE, BELT, AND DIAGONAL ARMOR BOLTS.

The five sizes of the type of bolt recommended for side, belt, and diagonal armor is shown full size in plates Nos. 2, 3, 4, 5, and 6; and the thread for each of these bolts, enlarged to ten times its actual size, is shown on the same plans. In using these bolts, they are all to be screwed hard down to a bearing on the bottoms of the bolt holes in the armor plate after the latter has been finally fitted in place; the plate is then to be drawn up firmly against the wood backing by screwing down the nuts on a number of the bolts, using a one-half inch steel washer under the nut temporarily for this purpose. The space around each of the other bolts is then to be filled with oakum, the latter being calked in solid up to the inner surface of the backing plates; the latter is to be given a coat of red lead around each bolt hole; the permanent lead washer is then to be dipped in thick red lead and placed over the bolt against the backing plate; and the nut is to be screwed down until it is embedded at least one-sixteenth inch in the lead washer, or more, if necessary, in order to make the extreme end of the thread appear slightly above the upper surface of the nut. The hole in the backing plates having been previously calked, as will be referred to later, and the oakum having been thoroughly driven in, the pressure of the nut will cause the lead to flow into the thread of the bolt and into the space containing the oakum so far as any slight surface looseness of the latter will permit, the lower surface of the lead washer will form a red-lead joint on the backing plates, and its upper surface will be cut by the nut itself to a bright smooth bearing surface against the latter. A thoroughly water-tight joint will thus be formed.

All the other bolts having been thus finally secured, the steel washers are removed from the bolts which were used to heave up the plate against the wood backing, the bolts are calked with oakum, lead washers are put on, and the nuts hove up as for the other bolts.

TURRET-ARMOR BOLTS.

For turrets, and for other places where a small depth of framing prevents the use of a bolt with a separate nut, and where perfect watertightness is not required, the board recommends the type of bolt shown in Plates Nos. 7, 8, 9, 10, and 11. This bolt has a solid head instead of a separate nut, and is provided with a lead washer as shown. The body of the bolt is wrapped with marline, which fills up the space around the reduced shank, and also serves to center the lead washers until the nut bears on the latter. This bolt is not intended to seat at the bottom of the hole in the armor, where a slight clearance should always be maintained.

ADJUSTMENT FOR VARIATIONS IN THICKNESS OF WOOD BACKING.

It is intended that armor bolts shall be ordered at the same time that the armor is ordered, and shall be made and delivered with the latter. Inasmuch as slight variations from the intended thickness of wood backing will always be necessitated by irregularities in the thickness and shape of the finished armor plates, it is necessary that this should be allowed for in the design of the bolt. In the case of bolts having a separate nut this is accomplished by making the thread of the bolt one-half

nger than depth of the nut, and by means of the lead washers; and in the of bolts with solid heads, by means of the lead washers only. The normal ness of these washers, before compression, is intended to be one-half inch, but tions in the thickness of backing due to irregularities in the armor plate may npensated for by allowing the lead washers to vary in final thickness from one- inch to three-fourths inch, the lower limit of one-fourth inch being obtained bedding the nut to a depth of one-fourth inch in the one-half inch washer. In ases, where some unusual distortion in the armor compels a variation from the ded thickness of the backing too great to be made up by the above means, it e necessary to reorder some of the bolts, but the expense connected therewith e much more than compensated for by the advantage of having all the other at hand as soon as the armor is received.

BOLTS FOR THIN ARMOR WITHOUT WOOD BACKING.

or of about or less than 3 inches in thickness, fitted directly to the backing without the use of wood backing, should usually be united to the plating armor with through rivets; but if for any reason it is preferred to use bolts, ard recommends for this purpose the 1.5-inch bolt shown in Plate No. 12. A asher and a wrapping of marline are used in this bolt as in the turret bolts, he thread is the ordinary Whitworth standard, $1\frac{1}{8}$ inches outside diameter, $4\frac{1}{2}$ ds per inch.

HANDLING ARMOR PLATES.

armor plates, having been delivered near the ship, they must be placed in their r location on the latter; and for this purpose it is convenient to employ either ting derrick or a fixed heavy pair of sheers, preferably the latter, if the vessel allowed to monopolize the use of the same for the time necessary for fitting ecuring the armor. There is no inherent difficulty in handling the plates d that which their mere weight presents; and the board deems it unnecessary ke any further comments on this point, except to note two methods that have mployed when belt armor had to be fitted after the armor deck was in place. h cases it becomes necessary to get the outer surface of the armor vertical, so t may enter the space between the armor shelf and the armor deck, while from anner in which the plate must be slung its lower end would naturally hang vay from the ship. When a floating derrick is used, the simplest way, as shown te No. 13, is to lower the armor abreast its intended position on the ship, and o shove the lower edge of the armor toward the ship by means of a strut, sup- against the framework of the pontoon carrying the derrick, while the pontoon lf hauled up against the ship by means of a tackle and winch. When a fixed k is used the same object may be attained, as shown in Plate No. 14, a long r being secured to the upper edge of the armor by a bolt, and having its lower sting against the armor and its upper end provided with a cross spall resting st the pendants from the derrick.

APPLIANCES FOR FITTING ARMOR BOLTS.

wood backing having been dressed down in accordance with molds made from tual armor plates, so that when the latter are firmly drawn up against the back- eir outer surfaces will be in their proper locations according to the plans, it ecomes necessary to bore holes through the backing plates and wood backing e armor bolts. These holes, while somewhat larger than the bolts, should heless be practically concentric with the axes of the latter; and in view of fficulty of attaining this result before the armor plates are fitted the following l method is recommended:

et of brass "centering plugs," with projecting nipples of steel, as shown in No. 15, is provided. The diameters of the plugs are the same as, or a trifle less the inside diameters of the thread of the armor bolts, so that the plugs fit y into the armor bolt holes; and their depth is such that when seated on the n of the bolt hole the point of the projecting nipple is flush with, or very ly above, the inner face of the armor. One of these plugs being set into each ole in the armor, a sheet of zinc is prepared of the size and shape of the inner e of the armor, and is laid down on the latter with its edges coinciding with of the armor plate. By then striking the zinc with a wooden mallet over each ole, indentations are made in the zinc by the nipples, the centers of which de exactly with the centers of the armor bolt holes. The sheet of zinc is then gainst the wood backing in the exact position that the armor will occupy, and dentations are punched through with a center punch, thus marking the centers bolt holes on the backing. The sheet of zinc is then removed and the holes re soldered up, when it is ready to be used with another plate.

A "pilot hole" is then bored through the wood backing and the backing plates at the location of each armor bolt, making the same angle with the face of the backing as will be made by the armor bolt. To obtain these angles accurately, all the "centering plugs" are removed and a threaded "screw plug," plate No. 16, is screwed into each bolt hole. This screw plug is provided with an internal thread, whose axis coincides with that of the external thread. A "pilot bolt" is then screwed into each of the screw plugs, the axes of such pilot bolts thus necessarily coinciding with the axes of the armor bolts to be finally used. The double-ended tripod, plate No. 17, is then slid down over the "pilot bolt" against the face of the armor, and the three adjusting rods with screw ends in the feet of the tripod are screwed down until the ends of the rods bear equally on the face of the plate, the tripod being meanwhile kept from lifting by means of the loose collar secured by a set screw to outer end of "pilot bolt."

This adjustment having been made, the collar is taken off, and the tripod is removed and placed with its other face against the wood backing, being properly located with respect to the proposed bolt hole by means of a centering rod with conical end inserted through the tube of the tripod, so that its point rests in the indentation in the backing, marking the center of the bolt hole, and small, thin iron washers being set below the ends of the three rods to prevent their penetrating the backing. The tripod is then firmly secured in this position by means of three wood screws.

The temporary centering rod being then removed, a "pilot hole" is drilled through the backing and backing plates, the tools for this purpose being introduced through the long central tube of the tripod and driven on the outside by an electric drill, or by an ordinary ratchet wrench. The correctness of the angle thus obtained is evident from the drawing, where the surface of the backing is sketched in as a dotted line. The "pilot hole" thus formed should be about one-half inch greater in diameter than the "pilot bolt," so that in spite of small errors made in the transfer of the position and direction of the armor bolt it will always be possible for the pilot bolt to adjust itself freely in the pilot hole. This process is to be repeated for each bolt.

All the "pilot holes" for any plate having been thus drilled, the pilot bolts are removed, but the screw plugs are allowed to remain in the plate. The plate is now placed in its proper position against the wood backing, and seated firmly against the latter by means of nuts on the inner ends of four bolts, of same diameter as the pilot bolts, screwed into screw plugs, one near each corner of the plate.

The "pilot bolts" are then screwed from inboard into the screw plugs, and the holes are bored through the backing plates by tools such as are shown on plate No. 18, one of which is intended to be used with an ordinary ratchet wrench, while the other is intended to be driven by an electric drill. Each of these tools has a central hole of the diameter of the "pilot bolt," so as to slip over and be guided by the latter, the hole being deep enough to take the entire projecting length of such bolt. Removable cutters are provided as shown. The holes through the wood backing are then cut by means of the auger shown in plate No. 19, which has a central opening of same diameter as the "pilot bolt," so as to be slipped down over and be guided by the latter. In plate No. 20 is shown a cutter head, which may be used in connection with the tools shown on plate No. 18. It is provided with dove tailed slots for taking various types of wood and iron cutters, as shown. This arrangement has been found very efficient for cutting the holes both in the wood backing and in the backing plates. When the hole has been carried through to the inner surface of the armor, the tools are removed and the "pilot bolt" and "screw plug" are taken out, using a wrench similar to those shown in plate No. 21.

In fitting barbette armor it is often convenient to follow a somewhat different method of procedure, which has the advantage of insuring contact of the several armor plates at the butts. The armor is set up in its proper position before any wood backing is fitted, and the location of the bolt holes is transferred to the backing plates by means of the tool shown in plate No. 22. This tool is provided with a long handle, by which it is lowered from above and shoved into the hole in the armor; the string then being pulled, the plunger is thrust forward and its rubber tip, which has been previously covered with white paint, marks the proper location of the bolt hole on the backing plate. A template is then made of the space at top between armor and backing plate, and a line is scrived on deck below along outside of armor. The armor being then temporarily removed, the holes marked off on the backing plate are drilled through; the wood backing is fitted by means of templates taken from the armor, radial pilot holes being then bored through it in prolongation of the holes in backing plates. The armor is then replaced, and the holes are enlarged by the usual pilot-bolt method. A similar method may be employed with turret armor.

WATER-TIGHTNESS.

While incidental mention has been above made of the method of securing water-tightness under the heads of the armor bolts by means of lead washers, and under

those of the backing bolts by hempen grommets soaked in red lead, the Board desires to emphasize the necessity of securing the utmost water-tightness at every bolt hole. In spite of the calking of the wood backing and of the oakum packing, which is driven hard around each armor bolt, as well as of the final filling of all interstices in the backing with red lead, a certain amount of leakage is bound to occur, so that water will find its way into the hole in the backing plate. While it can not penetrate to the inside of the ship under the lead washer or the hempen grommet, it can easily find its way between the two thicknesses of backing plates, unless this is provided against; and if it does so, it will be sure to show itself in the most unexpected places, causing great annoyance. To obviate this, the joint between the two backing plates must be calked; and in order that this calking may be effectively done, there must have been fitted in advance a number of rivets around each bolt hole to hold the plates together against their tendency to spread when being calked. For armor bolts, six $\frac{3}{4}$-inch rivets should thus be fitted around each bolt hole, while for backing bolts three such rivets are deemed sufficient. A convenient method of calking the backing bolt holes is shown in plate No. 23, where a calking tool is used in connection with a plug, the function of the latter being to keep the tool up to its work. Another tool for this purpose is shown in plate No. 24. The armor bolt holes are best calked by means of tools such as are shown on plates Nos. 25, 26, and 27.

The backing bolts shown in plate No. 1 are intended to be a driving fit in the holes, but equally water-tight work has been obtained by making the holes for these bolts about one-fourth inch greater in diameter than the bolts, and winding the latter closely with wicking soaked in red lead; and it is recommended that this practice be allowed, if preferred by the builders of the vessel.

FURNISHING MATERIALS.

The Board recommends that in future contracts the armor contractors be required to supply the armor plates and the armor bolts with their nuts only, while the centering and screw plugs, pilot bolts, lead washers, and all other accessories should be supplied by the builders of the vessel.

Very respectfully,

A. W. STAHL,
Naval Constructor, U. S. N., President of Board.
W. L. CAPPS,
Naval Constructor, U. S. N., Member.
PHILIP R. ALGER,
Professor of Mathematics, U. S. N., Member.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

I have the honor to be, very respectfully,

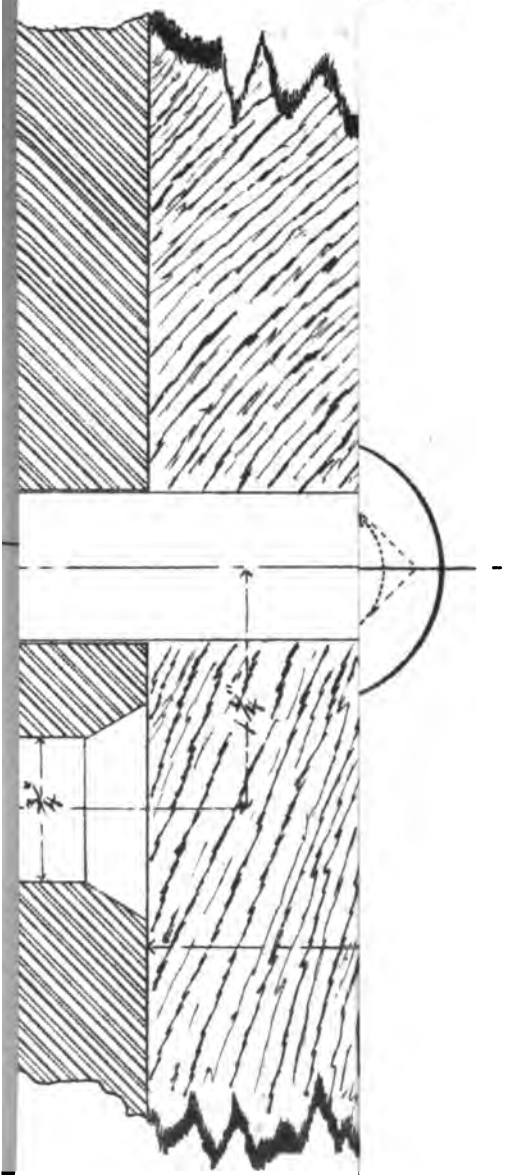
PHILIP HICHBORN,
Chief Constructor, U. S. N., Chief of Bureau.

The SECRETARY OF THE NAVY.

PLATE 1.

ARMOR ETC.

BACKING.



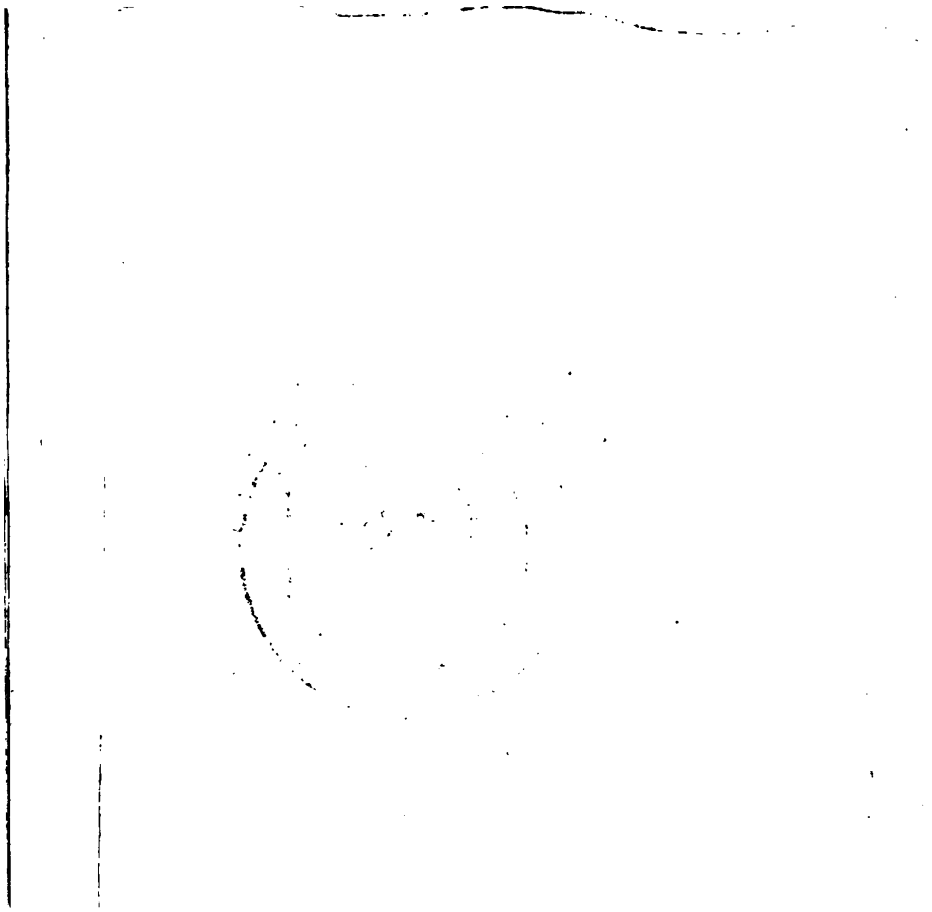


PLATE 2.

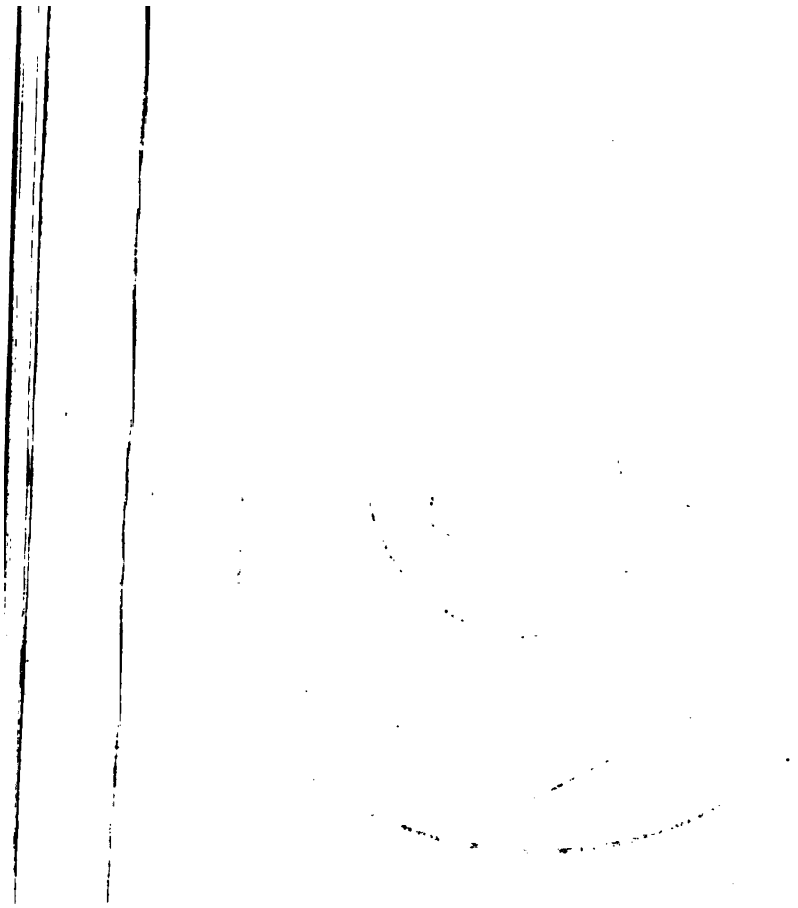
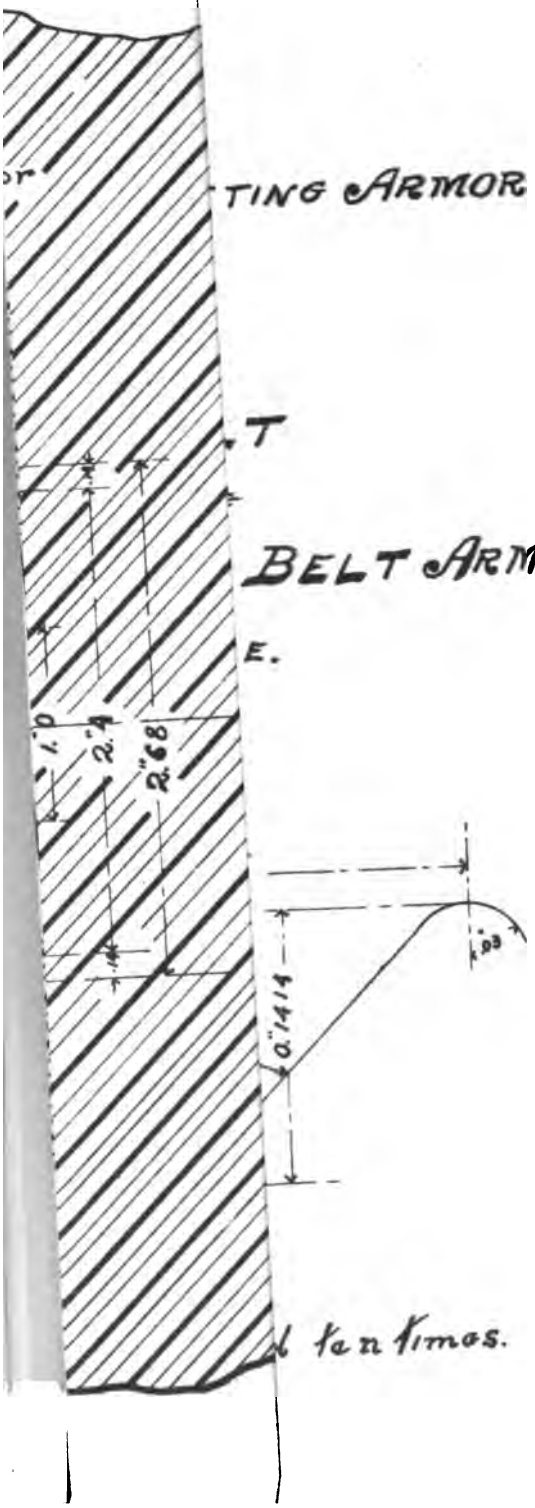
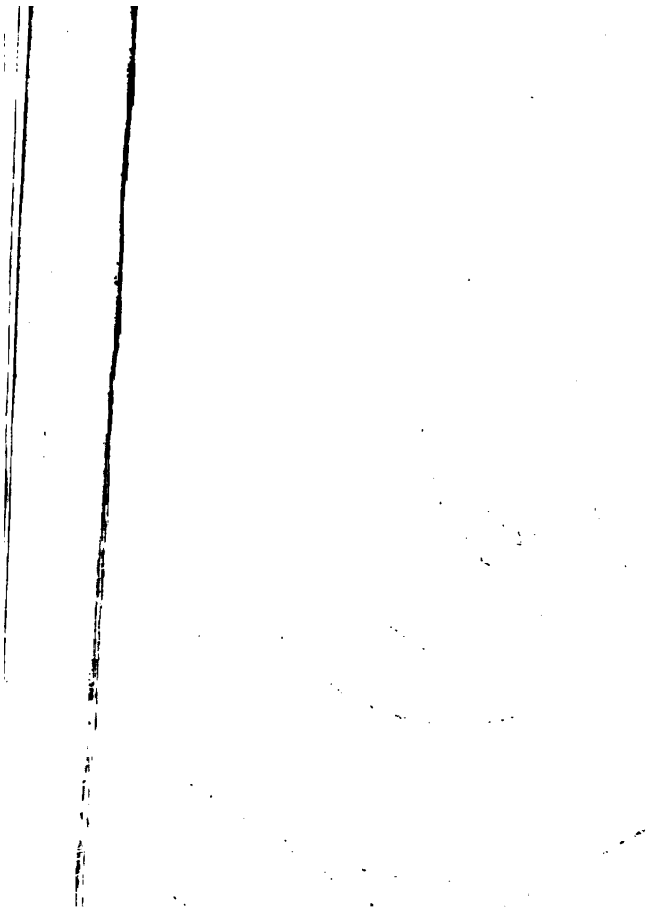
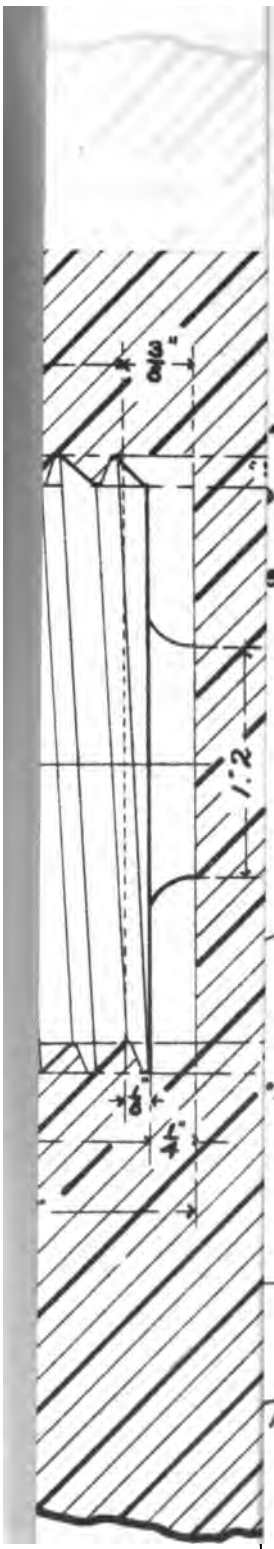


PLATE 3.







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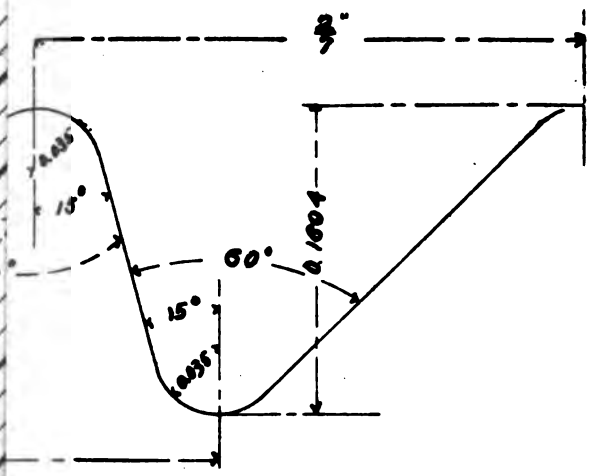
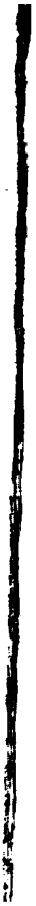
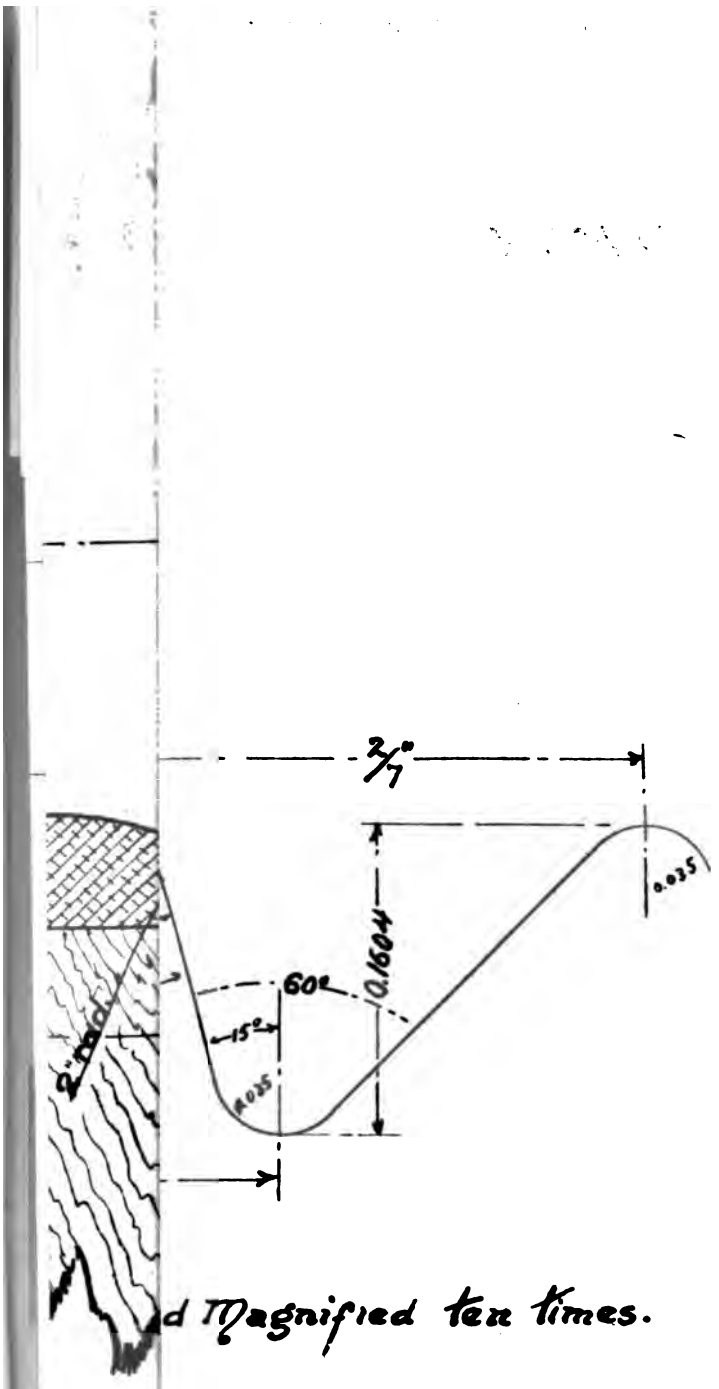


Thread Magnified ten times.





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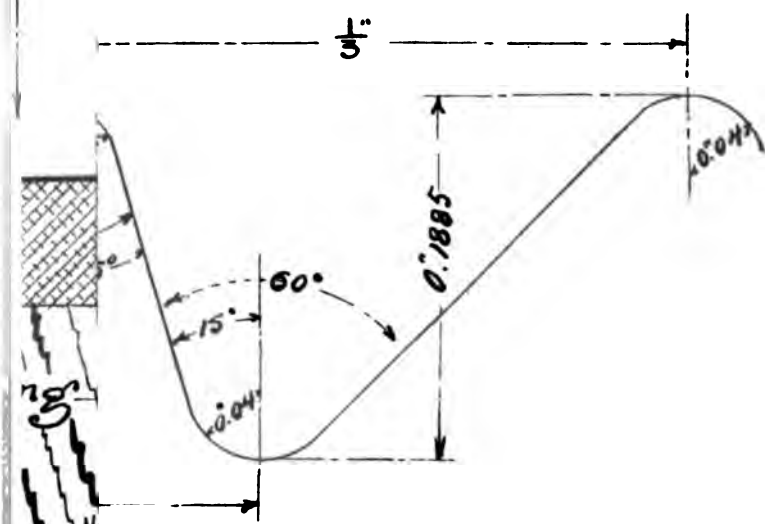

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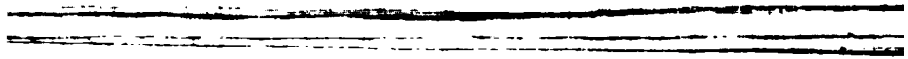

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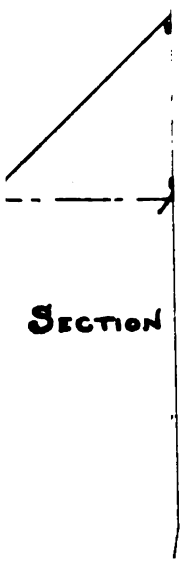


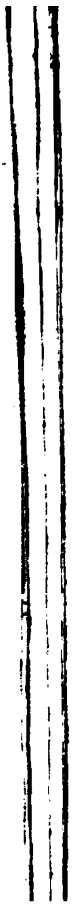
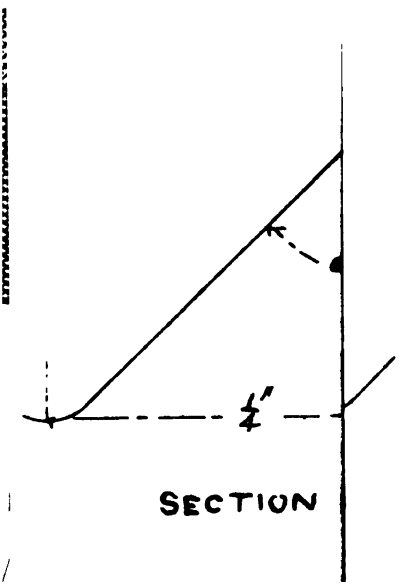


PLATE 8.

REARMOR ETC.



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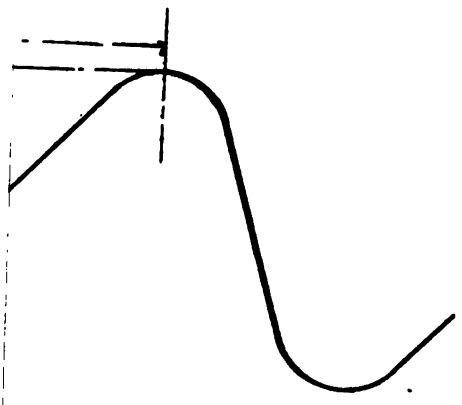

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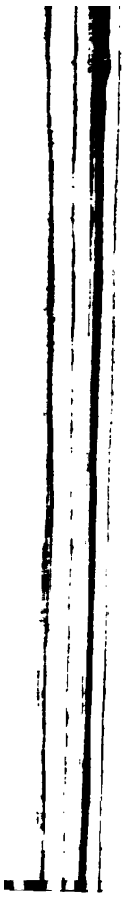

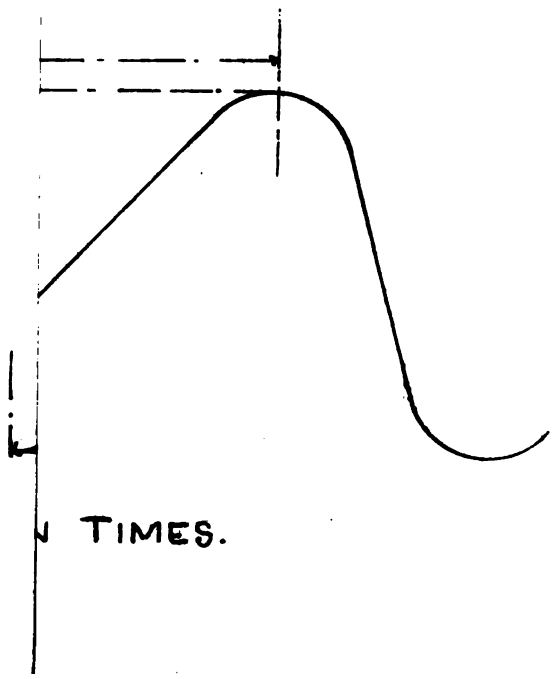
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ICKNESS OF BACKING PLATE

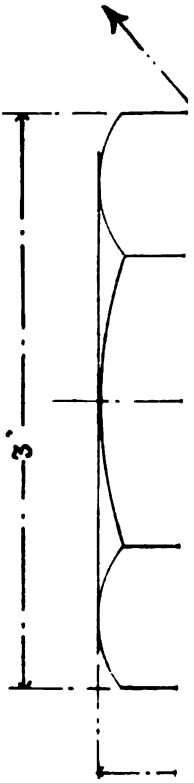

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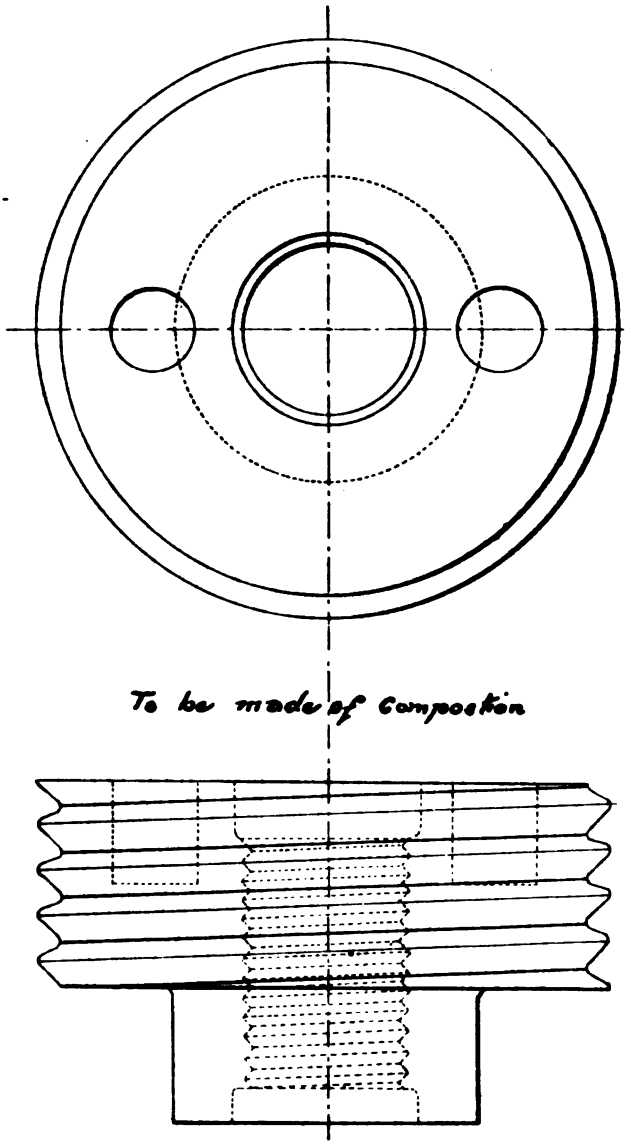
PLATE 16.

REPORT OF BOARD ON FITTING ARMOR ETC.

SCREW PLUG FOR ARMOR BOLT HOLES.



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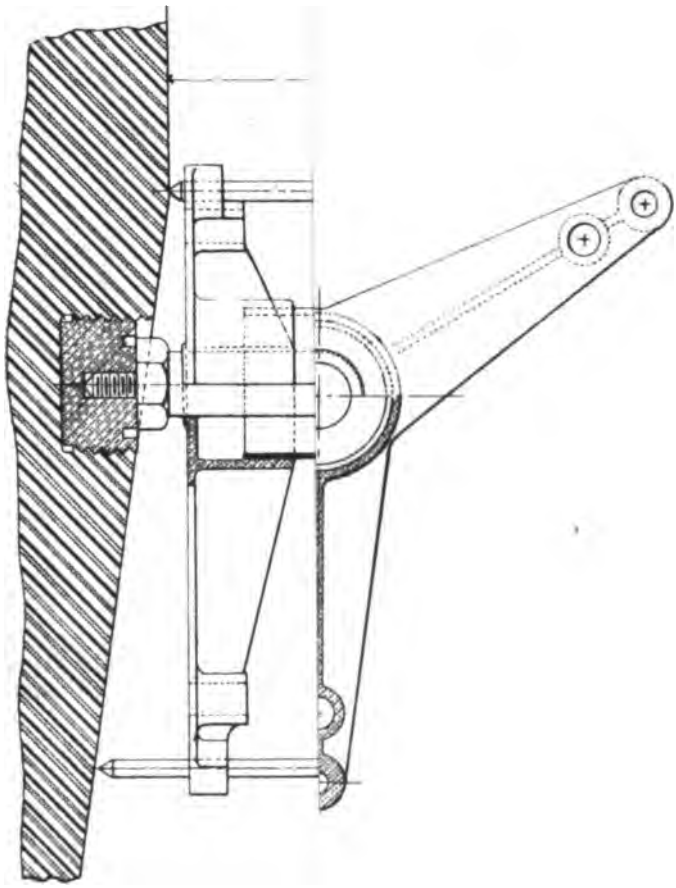

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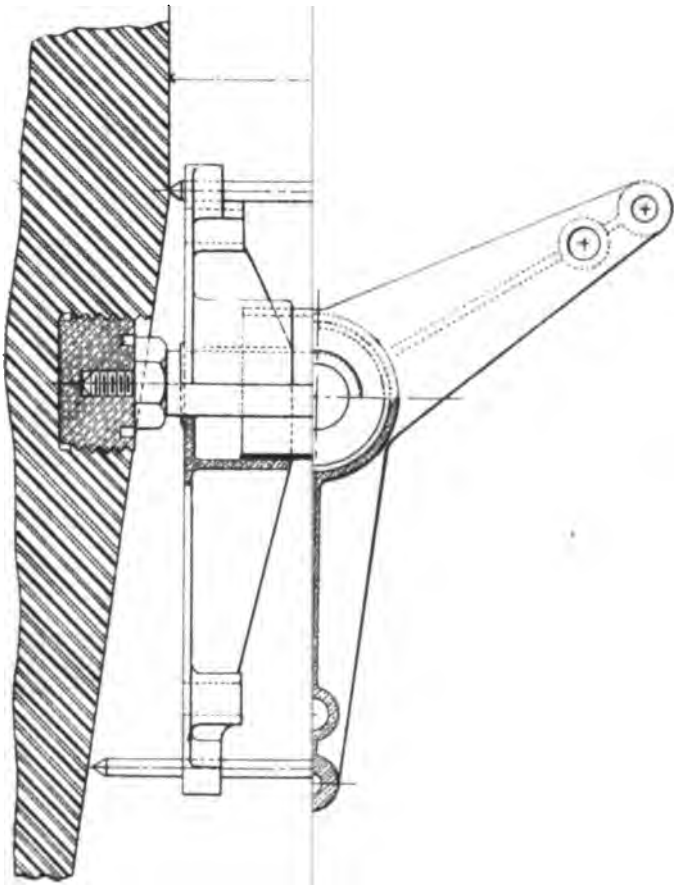
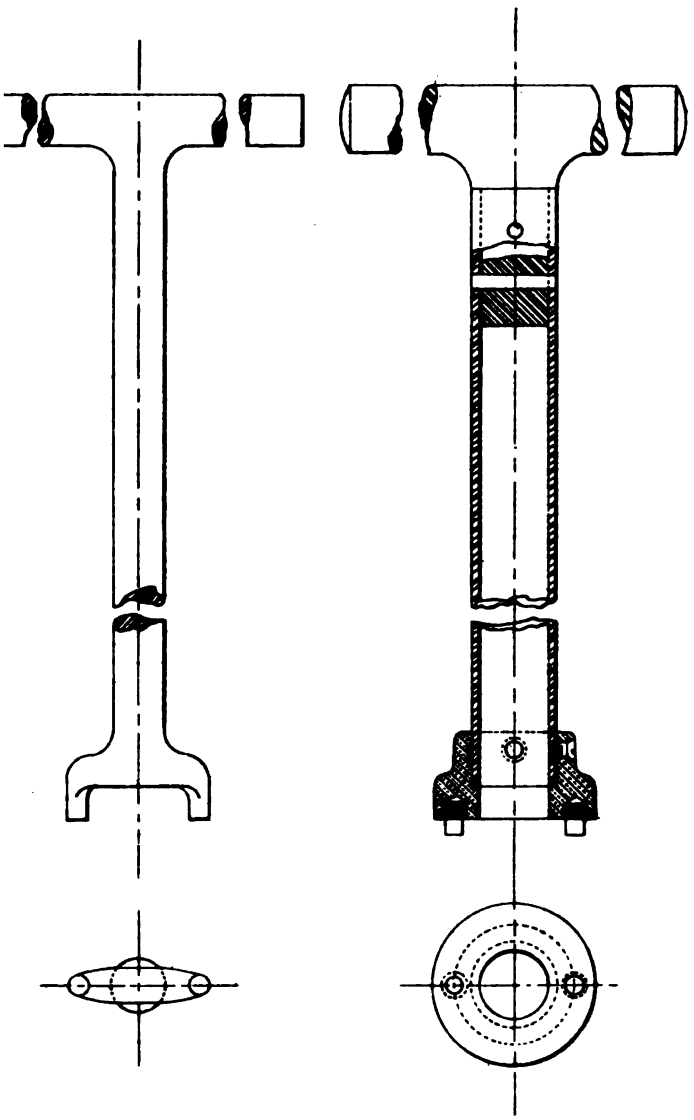


ENCHES FOR SCREW PLUGS.



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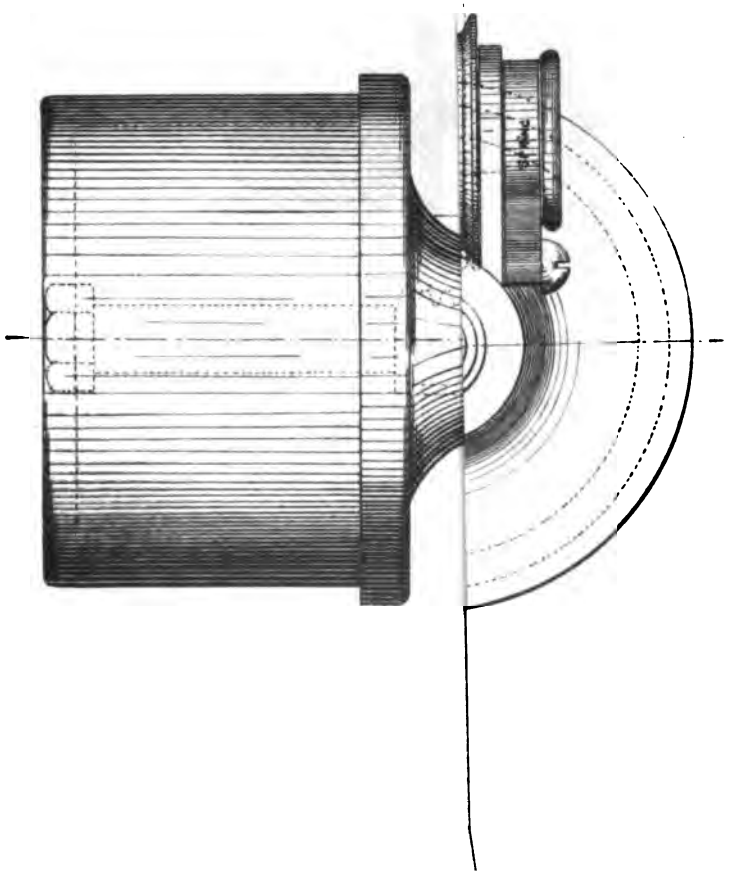


PLATE 23.

REPORT OF BOARD ON FITTING ARMOR ETC.

METHOD OF CAULKING JOINT BETWEEN BACKING PLATES AT BACKING BOLT HOLES.

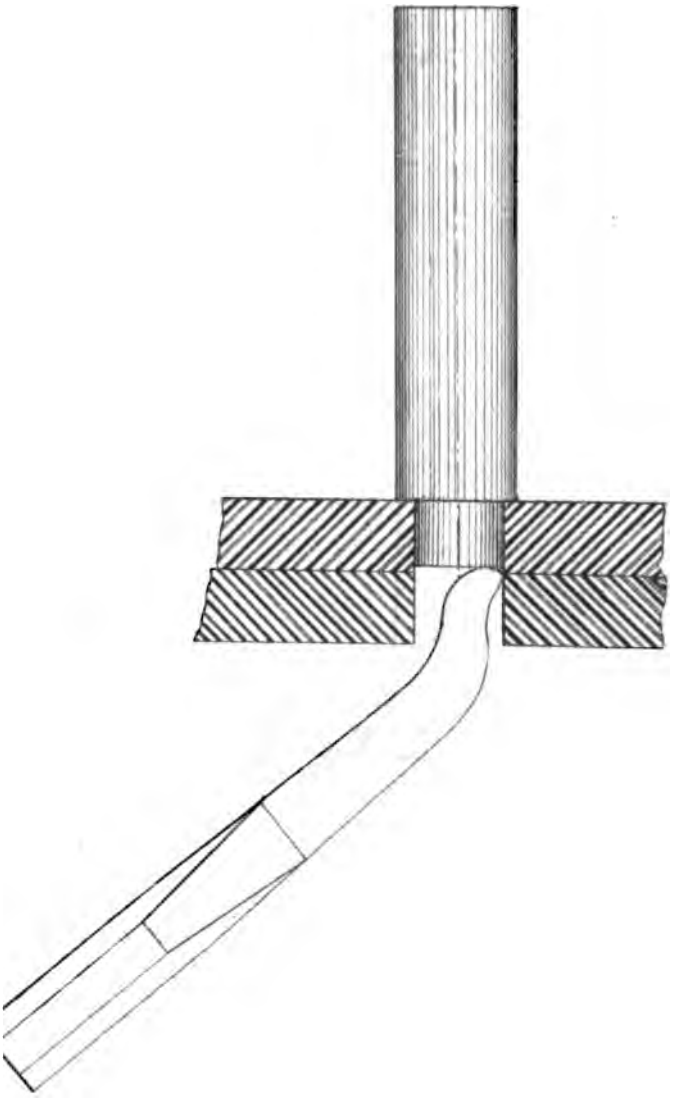


PLATE 24.

REPORT OF BOARD ON FITTING ARMOR ETC.

TOOL FOR CAULKING JOINT BETWEEN BACKING PLATES AT BACKING BOLT HOLES.

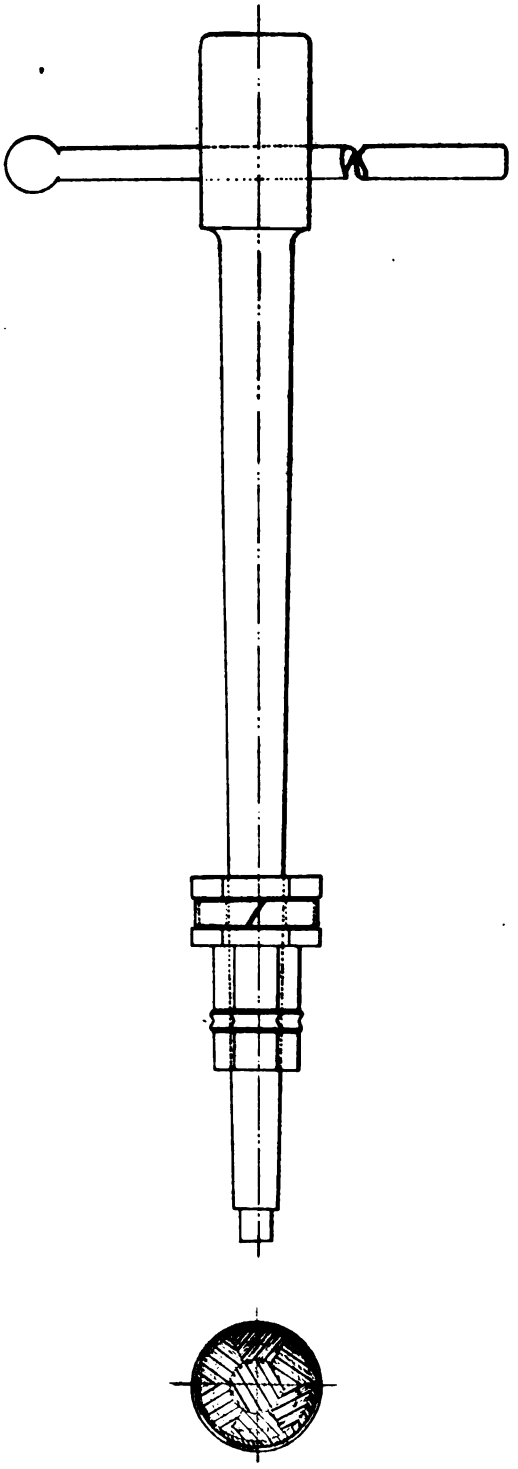
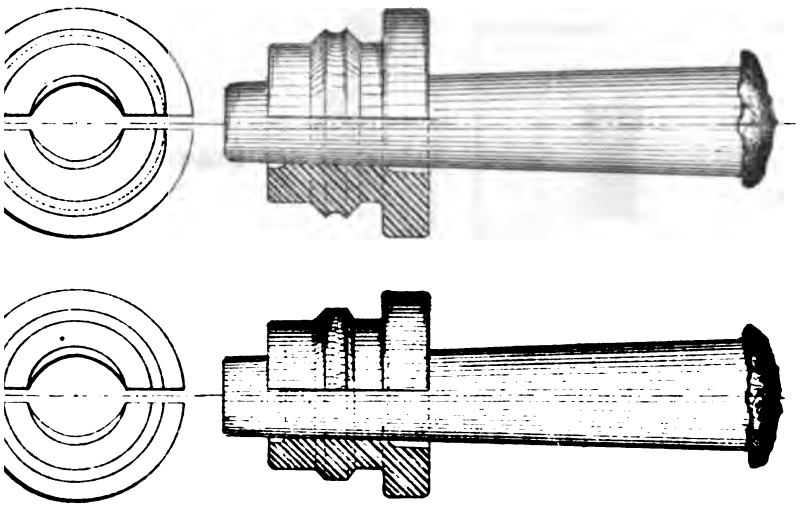


PLATE 25.

REPORT OF BOARD ON FITTING ARMOR ETC.

TOOL FOR CAULKING JOINT BETWEEN BACKING PLATES AT ARMOR BOLT HOLES.



TOOL FOR CAULKING JOINT BETWEEN BACKING PLATES AT ARMOR BOLT HOLES.

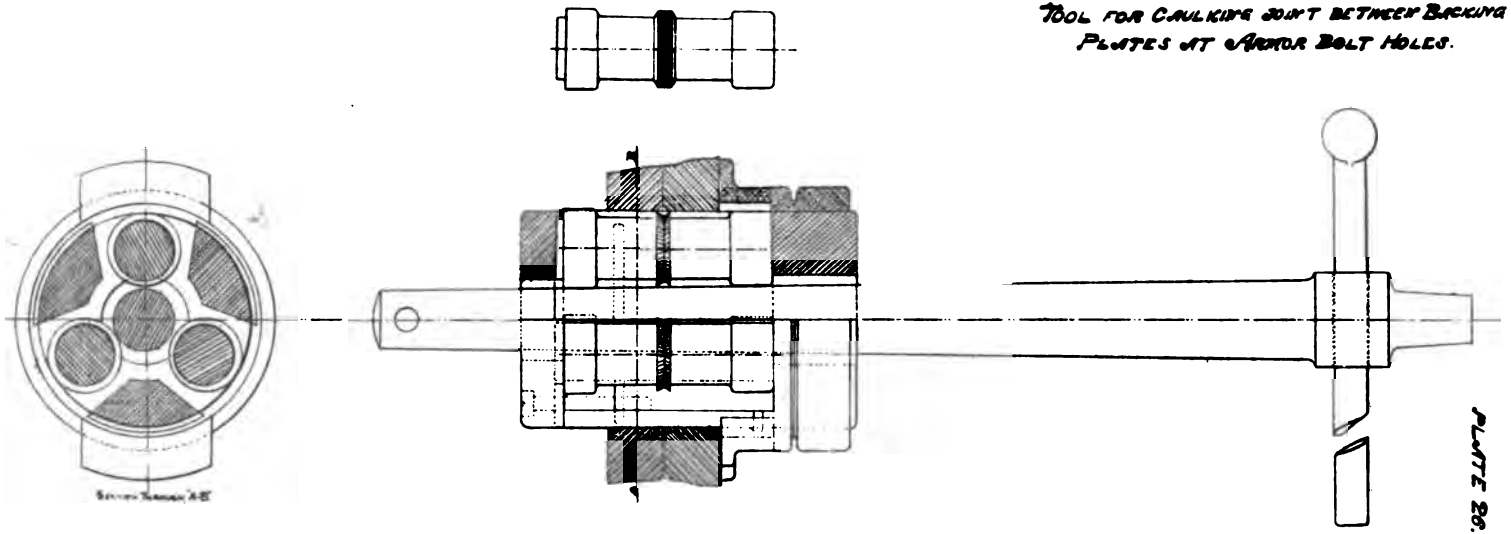


PLATE 26.

REPORT

OF THE

EF OF THE BUREAU OF STEAM ENGINEERING.

DEPARTMENT OF THE NAVY,
BUREAU OF STEAM ENGINEERING,
Washington, D. C., October 1, 1896.

r: In obedience to your order of July 8, 1896, the following annual
t of the operations of this Bureau during the past year, together
the estimates for the fiscal year ending June 30, 1897, is respect-
submitted:

APPROPRIATION, STEAM MACHINERY, 1896.

nt appropriated for fiscal year ending June 30, 1896; act approved ch 2, 1895		$675,000.00
in navy-yards and stations in repair of steam machin- boilers, etc., of naval vessels fitting for sea service, ervation and repair of tools, handling and preservation aterials, stores, etc	$173,238.68	
ase of materials, stores, machine tools, freight, and dental expenses	421,511.82	
nts for repairs, materials, freight, and incidental nses for ships on foreign stations	85,229.34	
Total	679,979.84	
epayments by transfers in adjustment of appropria- s	4,983.50	
Total expenditures		674,996.34
Balance on hand		3.66

GENERAL OPERATIONS OF THE BUREAU.

ring the year the Bureau has prepared plans and specifications
ie machinery of battleships Nos. 5, 6, 7, 8, and 9, for the *Hartford*,
for tug No. 5 for the League Island Navy-Yard, and plans for
nachinery of the 20-knot and 22½-knot torpedo boats, and for a
angement of the machinery of the *Atlanta*, due to the fitting of
boilers in that vessel.

w machinery has been placed in the tugs *Leyden* and *Standish*, the
er at the Portsmouth and the latter at the Norfolk Navy-Yard, and
machinery for the *Fortune* is nearing completion at the Norfolk
This is the last one of the 450-ton tugs to be re-engined, and,
completed, all of them will then be in excellent condition so far
eir machinery is concerned. The machinery for the *Unadilla* has
completed at the Mare Island Navy-Yard, and the tug is in serv-
that yard. That for tug No. 5 will be completed at the Norfolk
during the current fiscal year.

ork at the New York Navy-Yard on the new machinery for the
go is progressing as rapidly as the appropriation for that purpose

will permit. The completion of the boilers has been delayed owing to failure to obtain the nickel-steel plates originally ordered, and to further delays consequent on the failure of the manufacturers to deliver within reasonable time enough shell plates of nickel steel of a satisfactory finish to complete one of the cylindrical boilers. The working of the nickel steel plate finally accepted for one boiler has also involved some delay, and the experiment, as a whole, has added considerably to the cost of manufacture of the cylindrical boilers. Contract has been made with the Babcock and Wilcox Company for the water-tube boilers.

The Department having decided that entirely new machinery should not be built for the *Atlanta*, the Bureau has prepared a plan for fitting her with new boilers and making certain alterations in her present engines which will probably make her a more economical cruiser; but as the engines of this vessel are not of anything like modern design, the process of patching will probably prove an expensive one in the end, as the changes contemplated are only such as will be necessary to make the engines suit the boilers and render her engine room more accessible.

The attention of the Department is called to the fact that our modern twin-screw ships have from three to four times as many moving parts as the engines in the old ships, and that the auxiliary engines have multiplied from ten to twenty fold, entailing increased care and attention for their preservation, and increased cost for their repair and maintenance. The appropriation of this Bureau for these purposes has, for several years, been entirely too small to do all work that should be performed and still not create a deficiency, and it has only been by the exercise of the strictest economy, and by leaving undone much work that would add to efficiency that this has been accomplished. The result is that, during the last month of the fiscal year, work has to be almost entirely stopped and the workmen at the various navy-yards suspended. The men seek employment elsewhere, and when the next appropriation becomes available it is found that the best mechanics have found other employment and a new set of men has to be broken in, all of which entails increase of cost for the work. With a reasonable increase in the amount of the appropriation for steam machinery, the best mechanics could always be retained in the yards, and the result would in the end be attended with economy.

LIQUID FUEL.

The experiments conducted at the New York Navy-Yard in using liquid fuel in the third-class torpedo boat of the *Maine* have been completed. The evaporative results were good, even at the highest rates of combustion, and it only remains to ascertain whether the stowage and carrying of this fuel can be so effected as to eliminate danger from the gas that may be given off, which is the one objection to the use of any fuel oil other than petroleum refuse. It is to be regretted that conditions, other than those pertaining to the system of burning the fuel in these boats, operated to prevent a trial of the boat in free route for any length of time. The Department having authorized the fitting of this system in one of our tugs, in order to demonstrate its practicability under ordinary conditions of service, preparations are being made to use "fuel oil" only in this boat, and it is hoped that the results will be such as to warrant its general use for tugs and torpedo boats.

WATER-TUBE BOILERS.

The water-tube boiler question is one that is absorbing the attention of all designers of naval machinery, and the aim in all cases seems to

be to get a boiler which, while being reasonably light, shall be capable of ready repair in case of a ruptured tube, and contain so much water that a slight derangement of the feed apparatus will not result in burning out the boiler. The Bureau during the past year made tests of two different types of these boilers, both being in steamers on the Lakes, the owners of which kindly placed them at the disposal of the Bureau for such tests and examination as could be made without interfering with the service on which they were engaged. The first steamer experimented with, the *Northwest*, belonging to the Northern Steamship Company, and plying between Buffalo and Duluth, was fitted with Belleville boilers; the second one, the *Zenith City*, engaged in freight service between the same ports, with Babcock and Wilcox boilers.

For the purpose of comparing the results in the latter case with what might be expected from the ordinary cylindrical boilers under like conditions of service, a similar test was made on the steamer *Victory*, belonging to the same company as the *Zenith City*, and practically identical with her in all respects save boilers. As a result of the three tests above mentioned, and a further evaporative test of a Babcock and Wilcox boiler by the Bureau, it was decided to fit this type of boiler in the *Chicago* for about 4,500 indicated horsepower—one-half her power. Subsequently to the award of contract, the Department, upon the recommendation of the Bureau, approved the request of the contractors for the construction of gunboat No. 10 and for gunboat No. 15, to supply this type of boiler instead of the cylindrical one of the original design; and the fitting of this boiler in those two classes of gunboats will give an excellent opportunity to demonstrate its value as compared with the cylindrical boilers fitted in the other gunboats of the same class.

NAVY-YARD, BOSTON, MASS.

Small repairs have been made to the machinery of the *Iwana*, *Dolphin*, and *Passaic*, aggregating $602.69.

The expenditures other than for naval vessels were as follows:

Office expenses	$145.52
Care and handling of stores	39.00
Superintendence and care and repair of shop machinery and tools	6,442.19
Running, firing, and repairing yard engines and boilers	413.64
Improvement of plant	534.40
Care and repair of yard steam launches	23.40
Labor and material for other departments	2,411.20
Miscellaneous	5.65
Total	10,015.00

The recommendation contained in former reports that this yard be made a repair station is again renewed. The tools in the steam engineering shops are in an excellent state of preservation and fully equal to any work that might be required, and as there is an unlimited supply of skilled labor in the vicinity there is every facility for doing good work. In fact, the tools in this yard are superior to those in other yards where a large amount of work is done, necessarily at excessive cost for the want of proper tools.

NAVY-YARD, PORTSMOUTH, N. H.

As heretofore, the principal work in the steam-engineering shops at this yard has been the construction of steam-cutter machinery; this machinery is supplied for the boats of new ships of the Navy, and also

to repair in whole or in part the machinery worn out in service of boats or vessels in commission, as well as for those in use at the navy-yards. In addition, the new machinery of the *Leyden* was erected and a new boiler installed in the *Fern*, and her machinery thoroughly overhauled; the boiler put in was one of those that had been built for the *Galena*.

The expenditures other than for naval vessels were as follows:

Civil establishment	$1,203.25
Copyists	922.58
Office expenses	601.68
Superintendence and care and repair of shop machinery and tools	3,870.06
Running, firing, and repairing yard engines and boilers	13,639.31
Care and repair of yard steam launches, etc	781.69
Boiler and machinery of steam launches for issue	16,624.11
Labor and material for other departments	562.89
Miscellaneous	1,326.83
Total	39,532.40

NAVAL STATION, NEW LONDON, CONN.

No work upon naval vessels has been done at this station, or other work except the care and repair of the yard launches, costing in all $1,063.78.

NAVAL STATION, NEWPORT, R. I.

No work has been done at this station other than necessary repairs to steam-cutter machinery and supplying the required steam engineering material and stores, amounting in all to $3,441.70.

NAVY-YARD, NEW YORK, N. Y.

Work has been done upon new machinery of vessels for the Navy as follows: *Chicago*, *Ericsson*, *Indiana*, *Katahdin*, *Kearsarge*, *Maine*, *Puritan*, *Terror*, and *Texas*.

Repairs have been made to the machinery, or stores and outfits prepared, for the following vessels: *Alarm*, *Alliance*, *Atlanta*, *Bennington*, *Cincinnati*, *Columbia*, *Cushing*, *Detroit*, *Dolphin*, *Essex*, *Fern*, gunboat No. 10, *Lancaster*, *Marblehead*, *Minneapolis*, *Minnesota*, *Montgomery*, *Narkeeta*, *Newark*, *New York*, *Nina*, *Raleigh*, *San Francisco*, *Traffic*, tug No. 5, and *Vermont*.

Aggregate expenditure in the steam engineering department of this yard, $346,927.73.

The expenditures other than for naval vessels were as follows:

Civil establishment	$2,999.99
Office expenses	11,185.32
Care and handling of stores	6,399.02
Superintendence, care, and repair of shop machinery and tools	41,810.31
Running, firing, and repairing yard engines and boilers	4,839.86
Improvement of plant, new tools, etc	5,959.58
Repairs and maintenance of floating derrick	3,162.87
Care and repair of yard steam launches	3,486.41
Making evaporators and distillers for issue	12,104.67
Labor and material for other departments	8,181.75
Experimental and test purposes	7,935.44
Making stores for issue	9,291.61
Breaking up old material	1,129.73
Shipments	4,596.39
Holidays	6,646.50
Miscellaneous	806.27
Total	130,537.74

NAVY-YARD, LEAGUE ISLAND, PA.

Work was done in the steam engineering department, or stores and outfit prepared, for the following vessels: *Ajax*, *Catskill*, *Canonicus*, *Jason*, *Lehigh*, *Mahopac*, *Manhattan*, *Miantonomoh*, *Montauk*, *Nahant*, *Richmond*, *Vesuvius*, *Indiana*, *Massachusetts*, *Iowa*, *Brooklyn*, and steam launches Nos. 101 and 105, amounting to $15,021.73.

The expenditures other than for naval vessels were as follows:

Civil establishment	$1,127.68
Office expenses	482.00
Care and repair of shop machinery and tools	7,288.42
Care and repair of yard steam launches	356.97
Total	9,255.07

The necessity of a modern boiler-making plant at this yard becomes more apparent every day, and if it is the intention of the Department to lay up any of the ships at this yard, which seems admirably adapted for the purpose, it is of vital importance that tools should be provided for doing any work that may be required.

NAVY-YARD, WASHINGTON, D. C.

Repairs were made to the machinery of the following vessels, or stores and outfits prepared: *Cushing* and *Triton*, at an expenditure of $4,852.44.

The expenditures other than for naval vessels were as follows:

Office expenses	$53.91
Care and repair of shop machinery and tools	1,531.04
Care and repair of yard steam launches	243.95
Blue-print apparatus at Bureau	999.88
Holidays	150.34
Museum of Hygiene	167.13
Total	3,146.25

NAVAL ACADEMY, ANNAPOLIS, MD.

Small repairs have been made to the machinery of steam cutters and vessels attached to the Academy, and necessary stores and material supplied, amounting to $1,454.32.

NAVY-YARD, NORFOLK, VA.

Work has been done upon new machinery for the *Fortune*, *Standish*, and tugboat No. 5, and repairs made or stores and outfit prepared for the following vessels: *Ajax*, *Alliance*, *Amphitrite*, *Bancroft*, *Canonicus*, *Catskill*, *Columbia*, *Dolphin*, *Franklin*, *Indiana*, *Kentucky*, *Lehigh*, *Mahopac*, *Maine*, *Manhattan*, *Marblehead*, *Minneapolis*, *Monongahela*, *Montgomery*, *New York*, *Raleigh*, *Texas*, *Triton*, *Wahneta*, and *Wyandotte*.

Aggregate expenditure for naval vessels at this yard, $122,320.06.

The expenditures other than for naval vessels were as follows:

Civil establishment	$1,299.95
Drafting	734.90
Office expenses	4,663.40
Care and handling of stores	3,433.59
Superintendence	6,622.26
Care and repair of shop machinery and tools	15,271.18
Running, firing, and repairing yard engines and boilers	5,282.85
Improvement of plant	397.02

Care and repair of yard steam launches	$1,468.42
Boiler and machinery of steam launches for issue	1,243.53
Labor and material for other departments	2,582.43
Experimental and test purposes	126.36
Making stores for issue	2,211.44
Breaking up old material	797.43
Holidays	2,499.74
Miscellaneous	836.61
Total	49,471.10

In my last annual report I directed the attention of the Department to the necessity of modern tools and appliances for the steam engineering department of this yard. Each succeeding year only emphasizes the necessity of this, and I can not too strongly urge upon the Department the necessity for supplying the deficiency. As matters now stand, a modern high-pressure boiler can not be constructed at this yard; in fact, there is but one yard on the Atlantic Coast where it can be done.

The construction of machinery for tug No. 5 for the League Island Navy-Yard has progressed satisfactorily, and will soon be completed. New machinery is under construction for the tug *Fortune*, boilers which were on hand having been utilized in order to lessen the cost of construction.

NAVAL STATION, PORT ROYAL, S. C.

The completion at this station of the only dry dock on the Atlantic Coast which will take the battleships makes it imperative that there should be facilities at hand for doing the ordinary repair work that may be required when one of these vessels is docked, some of which can be done only at such a time. The necessity for providing for such repairs is too evident to require argument, especially as the great draft of water of these ships renders it almost impossible to take them to either the Norfolk or New York navy-yards for repairs except when light, in which condition they can go to the latter.

Expenditures at the station, principally for stores, have amounted to $360.06.

NAVAL STATION, KEY WEST, FLA.

Cost of maintenance of steam engineering plant, $2,160.38.

I have so often directed attention to the importance of a reasonably good repair shop at this station that I deem it sufficient to refer to my last annual report to show the necessity for some modern tools and a new building for the machine shop.

NAVY-YARD, PENSACOLA, FLA.

No work has been done except the repair of yard launches and the care and preservation of yard materials and tools.

The expenditures other than for naval vessels were as follows:

Civil establishment	$1,033.81
Care and handling of stores	518.32
Superintendence and care and repair of shop machinery and tools	2,142.83
Running, firing, and repairing yard engines and boilers	240.45
Care and repair of yard steam launches	485.83
Total	4,421.24

NAVAL STATION, SIDNEY, WASH.

The only work at this station was the small repair and preservation of the *Nipsic's* steam cutters, and necessary material and stores, amounting to $1,642.40.

The new dock which has just been completed at this place is the only one on the Pacific Coast that can take battleships like the *Oregon*. As these vessels are of such draft that they can not go to the Mare Island Navy-Yard when in need of repairs, it becomes necessary to provide for this elsewhere; and, as many important repairs to the machinery can be done only when the ship is in dock, I recommend that appropriation be asked for the necessary tools to do the work which may be found necessary when ships are docked, and for the erection of the shops for these tools.

NAVY-YARD, MARE ISLAND, CAL.

Work was done in the steam engineering department of the yard to the machinery of the following vessels, or stores and outfits prepared: *Adams*, *Albatross*, *Baltimore*, *Bennington*, *Boston*, *Camanche*, *Concord*, *Hartford*, *Marion*, *Mohican*, *Monadnock*, *Monterey*, *Olympia*, *Oregon*, *Pensacola*, *Petrel*, *Philadelphia*, *Ranger*, *Swatara*, *Thetis*, *Unadilla*, and *Nellie*, aggregating $123,362.98.

The expenditures other than for naval vessels were as follows:

Civil establishment	$1,400.00
Drafting and writers	6,137.93
Office expenses	1,600.00
Care and handling of stores	4,548.89
Superintendence	10,923.01
Care and repair of shop machinery and tools	28,184.72
Running, firing, and repairing yard engines and boilers	5,926.31
Care and repair of yard steam launches	385.76
Boiler and machinery of steam launches for issue	6,910.69
Labor and material for other departments	4,068.10
Experimental and test purposes	134.60
Making stores for issue	9,150.50
Breaking up old material	495.32
Holidays	3,585.29
Total	83,451.12

This is the only repair station on the Pacific Coast, and there are now at that yard under repair no less than seven vessels requiring more or less extensive repairs, after several years of continuous commission. The shops are ill adapted to the work, and the absence of proper tools and of a modern boiler-making plant are severely felt. The result is shown in the increased cost of work done at that yard beyond what it would cost if the proper tools were at hand and properly arranged for facilitating work. There are certain tools which should be obtained without delay, the most important being a hydraulic boiler-making plant.

PRESENT CONDITION OF THE MACHINERY OF NAVAL VESSELS.

The following statement shows the condition of the machinery, according to the latest reports:

Adams (wooden cruiser).—Engines and boilers in very fair condition. In commission.

Ajax (single-turret monitor).—Engines in fair condition. New boilers required for active service. Used by Naval Militia, New Jersey.

Alarm (torpedo ram).—In ordinary at Brooklyn Navy-Yard. Engines and boilers in fair condition.

Alert (third-rate iron cruiser).—Main and auxiliary engines in good condition. Vessel in commission.

Alliance (wooden cruiser).—Engines and boilers in fair condition. In commission.

Amphitrite (double-turret monitor).—In commission. Machinery in good condition.

Atlanta (second-rate steel cruiser).—Out of commission. New boilers authorized. Work in progress.

Baltimore (second-rate steel cruiser).—Main and auxiliary engines and boilers in fair condition. Out of commission; overhauling.

Bancroft (steel gunboat).—Engines and boilers in good condition. In commission.

Bennington (steel gunboat).—Engines and boilers in good condition. In commission.

Boston (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

Camanche (single-turret monitor).—Engines and boilers in good condition. Used by Naval Militia, California.

Canonicus (single-turret monitor).—Engines in fair condition, but new boilers would be required for active service.

Castine (steel gunboat).—Engines and boilers, except tubes, in good condition. In commission.

Catskill (single-turret monitor).—In ordinary. Engines in fair condition, but new boilers will be needed for active service.

Charleston (second-rate steel cruiser).—Out of commission. Machinery being overhauled.

Chicago (second-rate steel cruiser).—Out of commission. New machinery being built at navy-yard, New York.

Cincinnati (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

Columbia (first-rate steel cruiser).—Engines and boilers in good condition. In commission.

Concord (steel gunboat).—Out of commission. Machinery being overhauled.

Cushing (torpedo boat).—Engines and boilers in good condition. In commission.

Detroit (third-rate steel cruiser).—Engines and boilers in good condition. In commission.

Dolphin (dispatch vessel).—Engines in good condition. Boilers nearly worn out. In commission.

Enterprise (wooden cruiser).—Detailed as a school-ship for Massachusetts, and stationed at Boston.

Ericsson (torpedo boat).—Recently accepted from builders. Undergoing repairs to shafting and propellers, due to injuries received by the flooding of dry dock No. 2 at the navy-yard, New York.

Essex (wooden cruiser).—Engines and boilers in fair condition. Training ship.

Fern (tender).—Engines and boilers in good condition.

Fortune (tug).—Transferred to Bureau of Ordnance for use at Newport, R. I.

Franklin (wooden frigate).—Engines well cared for, but of obsolete type. New boilers for heating and auxiliary purposes have been fitted. Employed as receiving ship at Norfolk Navy-Yard. The machinery should be removed and used as old material.

Hartford (wooden cruiser).—In ordinary at Mare Island Navy-Yard. Machinery and boilers removed. Plans made for new machinery.

Indiana (first-class battle ship).—Engines and boilers in good condition. In commission.

Iroquois (wooden cruiser).—Machinery and boilers worn out and obsolete. Transferred to Marine Hospital Service.

Iwana (tug).—Machinery and boilers in good condition. Yard tug at Boston.

Jason (single-turret monitor).—In ordinary. Main and auxiliary engines in fair condition. Boilers in need of extensive repairs.

Katahdin (harbor-defense ram).—Engines and boilers in good condition. In commission.

Lancaster (wooden cruiser).—Engines and boilers in fair condition, but of antiquated type.

Lehigh (single-turret monitor).—In ordinary. Engines and boilers in good condition.

Leyden (tug).—New machinery put in at Portsmouth, N. H., Navy-Yard.

Machias (steel gunboat).—Engines and boilers in good condition. In commission.

Mahopac (single-turret monitor).—In ordinary. Engines require a general overhauling. Boilers unreliable.

Manhattan (single-turret monitor).—In ordinary. Engines in good condition, but the boilers are poor, and need to be replaced before going into service.

Maine (armored cruiser).—Engines and boilers in good condition. In commission.

Marblehead (third-rate steel cruiser).—Engines and boilers in good condition. In commission.

Marion (wooden cruiser).—Engines in good condition. Two boilers fit only for distilling purposes. In commission.

Massachusetts (first-class battle ship).—Engines and boilers in good condition. In commission.

Miantonomoh (double-turret monitor).—Machinery being overhauled. Out of commission.

Michigan (paddle steamer).—Engines and boilers in good condition. In commission.

Minneapolis (first-rate steel cruiser).—Engines and boilers in good condition. In commission.

Minnesota (wooden frigate).—Used by Naval Militia, Massachusetts.

Mohican (wooden cruiser).—Being overhauled. Out of commission.

Monadnock (double-turret monitor).—Engines and boilers in good condition. In commission.

Monocacy (iron, paddle-wheel).—Engines and boilers in fair condition. In commission.

Montauk (single-turret monitor).—In ordinary. Engines and boilers in fair condition.

Monterey (coast-defense vessel).—Engines and boilers in good condition. In commission. Water-tube boilers have been retubed.

Montgomery (third-rate steel cruiser).—Engine and boilers in good condition. In commission.

Nahant (single-turret monitor).—In ordinary. Engines in fair condition; boilers poor.

Nantucket (single-turret monitor).—Used by Naval Militia, North Carolina.

Narkeeta (tug).—Boilers and engines in good condition. Yard tug at the New York Navy-Yard.

Newark (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

New York (first-rate steel cruiser).—Engines and boilers, except tubes, in good condition. In commission.

Nina (tug).—Yard tug at New York Navy Yard. Machinery in good condition.

Nipsic (wooden cruiser).—Engines and boilers worn out and unfit for further service. Guard ship at Port Orchard, Puget Sound.

Olympia (first-class steel protected cruiser).—Engines and boilers in good condition. In commission.

Omaha (wooden cruiser).—Machinery obsolete; boilers worn out. Transferred to Marine Hospital Service.

Oregon (first-class battle ship).—Engines and boilers in good condition. In commission.

Passaic (single-turret monitor).—Used by Naval Militia, Georgia.

Pensacola (wooden frigate).—Vessel condemned. Machinery to be removed.

Petrel (steel gunboat).—Machinery being overhauled. Out of commission.

Philadelphia (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

Pinta (armed tug).—Engines in fair condition and boilers poor. In commission. Obsolete machinery. If the hull is in condition to warrant the expenditure, then new engines should be placed in the vessel, as her form is such that she would make a very serviceable and powerful tug.

Puritan (double-turret monitor).—In ordinary. Engines and boilers in good condition. In readiness for commission.

Raleigh (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

Ranger (third-rate iron cruiser).—Engines in fair, and boilers in good condition. Out of commission.

Richmond (wooden cruiser).—Machinery well cared for; boilers in fair condition. Receiving ship at League Island, Pa.

San Francisco (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

Standish (Naval Academy target-practice boat).—New engine and boilers have been installed at navy-yard, Norfolk, Va.

Swatara (wooden cruiser).—Vessel condemned.

Terror (double-turret monitor).—Engines and boilers in good condition. In commission.

Texas (second-class battle ship).—Engines and boilers in good condition. In commission.

Thetis (special-service vessel).—Engines and boilers in fair condition. In commission.

Triton (tug).—Machinery and boilers in good condition. Yard tug at Washington.

Vesuvius (dynamite-gun vessel).—Machinery being overhauled. Out of commission.

Wabash (wooden frigate).—Machinery obsolete, worn out, and condemned. Used as receiving ship at the Boston Navy-Yard.

Wahneta (tug).—Boilers and machinery in good condition. Yard tug at Norfolk.
Wyandotte (single-turret monitor).—Used by Naval Militia, Connecticut.
Yantic (wooden gunboat).—Engines and boilers in fair condition, but of obsolete type. In commission
Yorktown (steel gunboat).—Engines and boilers in good condition. In commission.

CONDITION OF MACHINERY OF NEW VESSELS.

Torpedo boat No. 2, Ericsson.—Machinery tried and the boat now at the New York Navy-Yard.
Torpedo boat No. 3.—Both engines in process of erection in the shops, the boilers nearly completed, and will soon be ready for test before being placed in the boat.
The following changes were made by direction of the Department: Size of main feed pumps increased; filters for distillers to be omitted; certain pipes to be insulated to prevent electrolysis.
Torpedo boat No. 4.—Condition of machinery same as that of No. 3, and same changes made.
Torpedo boat No. 5.—Work on the engines is progressing slowly. The boilers are nearly completed. The same changes have been made in machinery as in No. 3.
Torpedo boat No. 6.—Launched September 9, 1896. Time of contract expired August 19, 1896.
Torpedo boat No. 7.—Not launched.
Torpedo boat No. 8.—Work progressing in a satisfactory manner in the drafting room. Very little work under way in the shops except the condenser shells and heads, which are about 75 per cent completed.
Nashville (*gunboat No. 7*).—The engines are erected in the shop and the auxiliaries are nearly all secured in position on board. The boilers and fittings are in place.
At the request of the contractors, the ash-hoisting engines were omitted and direct-acting ash hoists fitted.
The Department directed that certain pipes be insulated to prevent electrolysis.
Wilmington (*gunboat No. 8*).—Machinery practically completed and ready for trial
At the request of the contractors, ash-hoisting engines were omitted and direct acting ash hoists fitted.
The Department directed the following changes: Certain pipes to be insulated to prevent electrolysis.
Helena (*gunboat No. 9*).—Machinery practically completed and ready for testing boilers under steam.
The same changes in machinery were made as for the *Wilmington*.
Gunboat No. 10.—Work progressing satisfactorily in shops.
At the request of the contractors the following changes have been made: Babcock and Wilcox water-tube boilers substituted for the Scotch boilers; Davidson independent air pumps for the air pumps worked by the main engine.
The Department directed that the condenser tubes be tinned. Tensile tests of plates for drums changed from 80,000 pounds to 60,000 and 66,000 pounds, as it was found impossible to get plates that would pass the steel tests.
Gunboat No. 11.—Work progressing satisfactorily in the shops.
At the request of the contractors the following changes have been made: Additional stays fitted between back head and back of combustion chamber; diameter of circulating pump runner changed from 22 inches to 20 inches.
The Department directed the omission of rings or ferrules in ends of boiler tubes, and that the condenser tubes be tinned.
As it was found to be impossible to obtain steel for shell plates of boilers that would pass the tests, the tensile strength was reduced by the Department from 80,000 pounds to between 65,000 and 73,000. This change necessitated an increase in the thickness of boiler shells from $\frac{1}{8}$ to 1 inch.
Gunboat No. 12.—The machinery is in the same state of completion as that for No. 11, and the same changes have beenmade.
Gunboat No. 13.—Work progressing satisfactorily in the shops.
At the request of the contractors the following changes were made: Length of boilers decreased half an inch in order to enable the shells to be made in one sheet, and the circumferential joint omitted; sides of combustion chamber to be made in two sheets instead of one; bolts in condenser to be made of manganese instead of Tobinbronze or naval brass; eccentrics of circulating pump to be made of composition instead of cast steel.
As it was found to be impossible to obtain the steel for shell plates of the boilers that would pass the tests, the tensile strength was changed by the Department from 80,000 pounds to between 65,000 and 73,000 pounds. This change necessitated an increase in the thickness of the boiler shell from $\frac{1}{8}$ to 1 inch.
Gunboat No. 14.—Work progressing satisfactorily in the shops.

The following changes were made at the request of the contractors: Design of main engines from forged steel columns, and one condenser for both main engines, to a design having forged columns in front and composition inverted Y-frames at the back, with a condenser for each main engine, the condenser being cast in three sections; the number of air and circulating pumps increased from one to two, to agree with the change in number of condensers; Howden's system of forced draft fitted to the boilers instead of the closed ash-pit system.

As it was found to be impossible to obtain the steel for shell plates of boilers that would pass the tests, the tensile strength was changed by the Department from 80,000 pounds to between 65,000 and 73,000 pounds. This change necessitated an increase in the thickness of boiler shells from ⅞ to 1 inch.

Gunboat No. 15.—Work progressing satisfactorily in the shops.

Same changes in engines and auxiliaries as have been made for No. 14.

Brooklyn.—Machinery practically completed and ready for trial.

The following changes were made by direction of the Department: The permanent smoke-pipe covers were omitted and the necessary fittings made so that canvas covers can be used; two of the 8-inch turrets to be turned by electricity and two by steam power; shrieking whistle fitted on after smoke pipe as a signal for closing watertight doors.

Indiana.—Machinery successfully tried and the vessel in commission.

The following changes were made by direction of the Department: Change in hand-controlling gear 8-inch turrets, made necessary by use of telescopic sights; omission of permanent smoke-pipe cover, and fittings made for use of canvas cover; hand-controlling gear fitted in additional sighting hood; worm wheels of 13-inch turrets changed from cast steel to composition; change in auxiliary controlling gear 13-inch turrets; check valve fitted in bilge suction pipe of circulating pump.

Massachusetts.—Machinery successfully tried and the vessel now in commission.

The following changes were made by the direction of the Department: Change in hand-controlling gear, 8-inch turrets, made necessary by use of telescopic sights; worm wheels of 13-inch turret changed from cast steel to composition; clutches fitted in hand-controlling gear, 13-inch turrets; check valve fitted in bilge suction pipe of circulating pumps; heater pipes fitted in 13-inch turret chambers; additional evaporator fitted on board; light service pump fitted for supplying water to hydraulic pump tanks.

Oregon.—Machinery successfully tried and the vessel now in commission.

The following changes made by the direction of the Department: Additional hydraulic gauges fitted in 13-inch turrets; heaters in turret chamber of 13-inch turrets.

Kearsarge (battle ship No. 5).—The work on this vessel is progressing satisfactorily in the drawing office and shops.

The following changes were made at the request of the contractors: H. P. valve changed from double to single ported, and diameter of valve increased; change in diameter of balance cylinders.

By direction of the Department a coupling was fitted in outboard portion of propeller shafting.

Kentucky (battle ship No. 6).—Same as *Kearsarge.*

Iowa.—Engines and boilers in position; the work of fitting uptakes, auxiliaries, piping, etc., progressing satisfactorily. Time of contract extended until August 11, 1897.

Katahdin.—Machinery tried and the vessel now in commission.

Holland submarine torpedo boat.—Work progressing slowly. Time of contract expired on March 13, 1896. Time extended until November 13, 1896.

TRIALS OF NEW VESSELS.

The appended table gives the result of the trials of the vessels that have been completed during the year, and it gives me pleasure to note that in every case the machinery worked to perfection, not the slightest hitch of any kind having occurred. Examination made subsequently to the trial failed to disclose any derangements or any injury to the machinery as a result of the trial. The trial of the *Brooklyn* is worthy of special mention, on account of the fact that she is the first vessel tried that has been fitted with tall smoke pipes. The results obtained on the official trial give every promise that the fitting of these tall pipes will be attended with economy, and that the *Brooklyn* will be able to steam continuously at a satisfactory speed without having to use her forced draft blowers.

1	Name of vessel	INDIANA	MASSACHUSETTS
2	Date of trial	Oct. 18, 1895	Apr. 23, 1896
3	Duration of trial	4 hours	4 hours
4	Place of trial	New England coast	New England coast
5	Condition of sea and weather	Smooth; light breeze	Smooth; light breeze
6	Length on water line, feet	348	348
7	Beam, feet	69.25	69.25
8	Draft, mean, on trial, feet	23.88	24.08
9	Displacement, tons	10,225	10,265
10	Immersed midship section, square feet	1,540	1,545
11	Coefficient of fineness, prismatic	.622	.619
12	Type of engines	Vertical triple expansion	Vertical triple expansion
13	Cylinder, diameters in inches. High pressure	34.44	34.5
14	Cylinder, diameters in inches. Int. pressure	48	48
15	Cylinder, diameters in inches. Low pressure	75	75
16	Stroke of pistons, inches	42	42
17	Number and type of boilers	4 D. E.; 2 S. E.	4 D. E.; 2 S. E.
18	Length and diameter of boilers, feet	D. E., 18 by 15; S. E., 8.5 by 10.15.	D. E., 18 by 15; S. E., 8.5 by 10.15.
19	Furnaces, number and diameter	32; 36". 4; 33"	32; 36". 4; 33"
20	Grate surface used on trial, square feet	616	616
21	Heating surface used on trial, square feet.	19,194	19,194
22	Condensing surface used on trial, square feet.	13,510	13,510
23	Screw propeller. Diameter, feet	15.5	15.5
24	Screw propeller. Pitch, mean, feet	16	16
25	Screw propeller. Pitch, mean, adjustable between, feet.	14.25 and 16.25	14.25 and 16.25
26	Screw propeller. Area, developed, both screws, feet.	107.7	107.7
27	Screw propeller. Number of blades	3	3
28	Steam pressure in pounds. In boilers, per gauge	166.53	163
		Starboard. / Port.	Starboard. / Port.
29	Steam pressure in pounds. At engines, per gauge	163.6 / 165	155.6
30	Steam pressure in pounds. In first receiver, absolute	70.39 / 75.61	80.10 / 74.70
31	Steam pressure in pounds. In second receiver, absolute	25.55 / 25.83	28.05 / 27.90
32	Vacuum in condensers, in inches of mercury.	24.68 / 24.68	25.15 / 25.20
33	Revolutions of main engines, per minute	130.79 / 131.25	132.3 / 133.06
34	Mean pressures, in pounds per square inch. High pressure	65.03 / 57.32	56.65 / 57.50
35	Mean pressures, in pounds per square inch. Int. pressure	31.60 / 33.55	34.45 / 34.77
36	Mean pressures, in pounds per square inch. Low pressure	13.19 / 12.62	14.45 / 17.90
37	Mean pressures, in pounds per square inch. Equivalent on low pressure.	39.37 / 37.96	40.95 / 40.90
38	Indicated horse-power. High pressure	1,644.64 / 1,454.06	1,453.47 / 1,484.88
39	Indicated horse-power. Intermediate pressure	1,575.57 / 1,072.25	1,783.42 / 1,756.82
40	Indicated horse-power. Low pressure	1,605.68 / 1,545.80	1,813.06 / 1,836.19
41	Indicated horse-power. Aggregate each main engine.	4,825.89 / 4,672.11	5,049.95 / 5,077.88
42	Indicated horse-power. Aggregate both main engines.	9,498	10,127.83
43	Indicated horse-power. Air-pump engines	11.048 / 9.367	5.17 / 7.27
44	Indicated horse-power. Circulating pump engines	19.51 / 7.234	15.19 / 21.75
45	Indicated horse-power. Feed pumps	74.607	63.23
46	Indicated horse-power. Blowers	52.808	107.19
47	Indicated horse-power. Other auxiliaries	65.917	45.03
48	Indicated horse-power. Aggregate, mean, of all machinery.	9,738.491	10,402.66
49	Speed per hour, in knots	15.547	16.2079
50	Slip of propeller (mean), per cent	24.85	22.64
51	Indicated thrust (main engines only) per square foot of developed area of propeller, in pounds.	1,413 / 1,363	1,462 / 1,461
52	I. H. P. per square foot of grate, based on mean I. H. P.	15.8	16.9
53	Heating surface per I. H. P., based on mean I. H. P.	1.97	1.84
54	Condensing surface per I. H. P., based on mean I. H. P.	1.387	1.298
55	Coal. Kind and quality used	Pocahontas; hand picked.	Pocahontas; hand picked
56	Coal. Total burned per hour, pounds	19,091	Not measured
57	Coal. Per hour, per square foot of grate, pounds.	31.96	
58	Coal. Per hour, per I. H. P., pounds	2.022	
59	Air pressure in inches of water	.955	.994

Oregon			Katahdin			1
May 14, 1896			Oct. 31, 1895			2
4 hours			2 hours			3
Santa Barbara Channel			Long Island Sound			4
Smooth; light breeze			Moderate			5
848.1			250.17			6
69.25			41.67			7
24			14.85			8
10,250			2,125			9
1,534			461			10
.620			.480			11
Vertical triple expansion			Horizontal triple expansion			12
34.5			25			13
48			36			14
75			56			15
42			36			16
4 D. E.; 2 S. E.			2 D. E.; 1 S. E.			17
D. E., 18 by 15; S. E., 8.5 by 10			D. E., 22.5 by 13.69; S. E., 11.6 by 13.69.			18
22; 36". 4; 33"			15; 42"			19
616			354			20
18,754			12,150			21
13,600			6,668			22
15			11.83			23
15.5			14			24
15 and 17						25
132			72			26
3			3			27
162.8			166.8			28
Starboard.	Port.		Starboard.	Port.		
156.5	155.9		164.3	166.3		29
82.13	82.24		93.92	103.79		30
35.31	36.11		29.49			31
24.69	25.32		24.03	23.86		32
128.29	128.21		147.72	143.71		33
59.60	60.79		84.11	29.06		34
31.55	32.61		38.06	29.57		35
18.66	21.21		18.24	16.75		36
44.19	47.43		40.58	34.61		37
1,484.16	1,512.60		439.93	365.73		38
1,536.95	1,566.83		1,042.03	779.32		39
2,233.50	2,537.18		1,209.28	1,074.07		40
5,253.71	5,636.61		2,691.24	2,219.14		41
10,890.32			4,910.38			42
8.77	7.74					43
51.48	34.47		95.774			44
44.35			8.464			45
41.28			32.16			46
32.61			21			47
11,111.62			5,067.778			48
16.791			16.1146			49
14.33			19.9			50
1,321	1,418		1,193	1,011		51
18.037			14.316			52
1.745			2.397			53
1.224			1.316			54
Harris's deep navigation			Pocahontas; hand picked			55
23,593			13,304			56
38 3			37.6		Not measured	57
2.123			2.625			58
.90			1.5			59

Brooklyn*						1
Aug. 27, 1896						2
4 hours						3
New England coast						4
Smooth; light breeze						5
490						6
64.69						7
21.60						8
8,150						9
1,374						10
.506						11
Vertical triple expansion						12
22						13
47						14
72						15
42						16
5 D. E.; 2 S. E., 4-18 by 16.25						17
D. E., 1-20 by 16.25; S. E., 2-9 by 16.25.						18
48, 49"						19
1,016.2						20
33,432						21
23,300						22
16.5						23
20						24
19.5 and 22						25
151.5						26
3						27
158.8						28
Starboard.	Port.					
152.3						29
79.9	78.20					30
30.75	31.23					31
24.95	25.53					32
136.2	136.9					33
56.79	61.34					34
32.53	29.93					35
14.29	13.96					36
39.43	38.96					37
2,664.58	2,785.44					38
3,219.36	2,951.44					39
3,344.82	3,282.64					40
9,228.76	9,019.52					41
18,248.28						42
8.208	8.342					43
37.42	40.62					44
82.04						45
269.06						46
75.65						47
18,709.62						48
21.9117						49
18.72						50
1,118	1,088					51
18.05						52
1.78						53
1.24						54
Pocahontas; hand picked						55
						56
Not measured						57
						58
						59

* The figures for mean pressure are the mean of the mean pressures in the cylinders of the forward and after engines, and the I. H. P. the sum of the I. H. P. for the same cylinders.

1	Name of vessel		INDIANA	MASSACHUSETTS
2	Date of trial		Oct. 18, 1895	Apr. 23, 1896
3	Duration of trial		4 hours	4 hours
4	Place of trial		New England coast	New England coast
5	Condition of sea and weather		Smooth; light breeze	Smooth; light breeze
6	Length on water line, feet		348	348
7	Beam, feet		69.25	69.25
8	Draft, mean, on trial, feet		23.88	24.08
9	Displacement, tons		10,225	10,265
10	Immersed midship section, square feet		1,540	1,545
11	Coefficient of fineness, prismatic		.622	.619
12	Type of engines		Vertical triple expansion	Vertical triple expansion
13	Cylinder, diameters in inches.	High pressure	34.44	34.5
14		Int. pressure	48	48
15		Low pressure	75	75
16	Stroke of pistons, inches		42	42
17	Number and type of boilers		4 D. E.; 2 S. E.	4 D. E.; 2 S. E.
18	Length and diameter of boilers, feet		D. E., 18 by 15; S. E., 8.5 by 10.15.	D. E., 18 by 15; S. E., 8.5 by 10.15.
19	Furnaces, number and diameter		32; 39". 4; 33"	32; 36". 4; 29"
20	Grate surface used on trial, square feet		616	616
21	Heating surface used on trial, square feet		19,194	19,194
22	Condensing surface used on trial, square feet		13,510	13,510
23	Screw propeller.	Diameter, feet	15.5	15.5
24		Pitch, mean, feet	16	16
25		Pitch, mean, adjustable between, feet	14.25 and 16.25	14.25 and 16.25
26		Area, developed, both screws, feet	107.7	107.7
27		Number of blades	3	3
28	Steam pressure in pounds.	In boilers, per gauge	166.53	163
			Starboard. / Port.	Starboard. / Port.
29		At engines, per gauge	163.6 / 165	155.6 /
30		In first receiver, absolute	70.39 / 75.61	80.10 / 74.70
31		In second receiver, absolute	25.55 / 25.83	28.05 / 27.90
32	Vacuum in condensers, in inches of mercury		24.68 / 24.68	25.15 / 25.20
33	Revolutions of main engines, per minute		130.79 / 131.25	122.3 / 133.06
34	Mean pressures, in pounds per square inch.	High pressure	65.03 / 57.32	56.65 / 57.50
35		Int. pressure	31.60 / 33.55	34.45 / 34.77
36		Low pressure	13.19 / 12.62	14.45 / 17.90
37		Equivalent on low pressure.	39.37 / 37.98	40.95 / 49.90
38	Indicated horse-power.	High pressure	1,644.64 / 1,454.06	1,453.47 / 1,484.88
39		Intermediate pressure	1,575.57 / 1,072.25	1,783.42 / 1,756.82
40		Low pressure	1,605.68 / 1,545.80	1,813.06 / 1,836.19
41		Aggregate each main engine.	4,825.89 / 4,672.11	5,049.95 / 5,077.88
42		Aggregate both main engines.	9,498	10,127.83
43		Air-pump engines	11.048 / 9.367	5.17 / 7.27
44		Circulating pump engines	19.51 / 7.234	15.19 / 21.75
45		Feed pumps	74.607	63.23
46		Blowers	52.808	107.19
47		Other auxiliaries	65.917	45.03
48		Aggregate, mean, of all machinery.	9,738.491	10,402.66
49	Speed per hour, in knots		15.547	16.2079
50	Slip of propeller (mean), per cent		24.85	22.64
51	Indicated thrust (main engines only) per square foot of developed area of propeller, in pounds.		1,413 / 1,363	1,462 / 1,461
52	I. H. P. per square foot of grate, based on mean I. H. P.		15.8	16.9
53	Heating surface per I. H. P., based on mean I. H. P.		1.97	1.84
54	Condensing surface per I. H. P., based on mean I. H. P.		1.387	1.298
55	Coal.	Kind and quality used	Pocahontas; hand picked	Pocahontas; hand picked
56		Total burned per hour, pounds	19,691	Not measured
57		Per hour, per square foot of grate, pounds.	31.96	
58		Per hour, per I. H. P., pounds	2.022	
59	Air pressure in inches of water		.955	.994

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Steam Engineering, Navy Department—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year, ending June 30, 1897.
STEAM MACHINERY—continued.			
For purchase of material and stores; purchase, fitting, repair, and preservation of machinery and tools in navy-yards and stations, and running yard engines	$300,000		$293,500
For incidental expenses for naval vessels, yards, and the Bureau, such as foreign postage, telegrams, advertising, freight, photographing, books, stationery, and instruments	10,000		10,000
		$735,000	728,500
CONTINGENT.			
[Act June 10, 1896.]			
For contingencies, drawing materials, and instruments for the drafting room	1,000	1,000	1,000
STEAM MACHINERY (SPECIAL).			
[Act June 10, 1896.]			
To complete new machinery, boilers, etc., of U. S. S. Chicago, building at New York navy-yard	175,000		150,000
To complete new machinery, boilers, etc., of U. S. S. Hartford, building at Mare Island navy-yard	100,000		75,000
		275,000	
IMPROVEMENT OF PLANT.			
Naval station, Key West, Fla.: For tools for machine shop, foundry, and boiler shop. (Submitted)	50,000	50,000	
Navy-yard, Norfolk, Va.: Extra tools required to put the yard in condition for building and repairing modern marine machinery with economy and dispatch, including improvements in handling machinery and in the boiler-making plant. (Submitted)	49,205	49,205	
Navy-yard, Mare Island, Cal.: For modern machine tools for boiler shop and machine shop. (Submitted)	50,000	50,000	
CIVIL ESTABLISHMENT.			
[Act June 10, 1896.]			
Navy-yard, Portsmouth, N. H.:			
One clerk to Department, per annum $1,200			
One messenger 600			
	1,800		
Navy-yard, Brooklyn, N. Y.:			
One clerk to Department, per annum 1,400			
One writer 1,000			
One messenger 600			
	3,000		
Navy-yard, League Island, Pa.:			
One clerk to Department, per annum	1,200		
Navy-yard, Norfolk, Va.:			
One clerk to Department, per annum 1,300			
One messenger 600			
	1,900		
Navy-yard, Pensacola, Fla.:			
One writer, per annum	1,000		
Navy-yard, Mare Island, Cal.:			
One clerk to Department, per annum 1,400			
One writer 1,000			
One messenger 600			
	3,000		11,900
		11,900	

Very respectfully,

GEO. W. MELVILLE,
Engineer-in-Chief, U. S. N., Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT

OF

THE PAYMASTER-GENERAL OF THE NAVY,

CHIEF OF THE BUREAU OF SUPPLIES AND ACCOUNTS.

NAVY DEPARTMENT,
BUREAU OF SUPPLIES AND ACCOUNTS,
Washington, D. C., October 1, 1896.

SIR: I have the honor to submit the report of the Paymaster-General of the Navy for the fiscal year ending June 30, 1896, with estimates of appropriations for the coming fiscal year, and tabulated statements as follows:

A.—General financial statement.
B.—Statement of provisions, clothing, and small stores, and contingent.
C.—Statement of expenditures of money and material at shore stations, and objects to which applied.
D.—Statement showing the value of real estate and chattels and machinery plant at the several navy-yards and stations June 30, 1896.
E.—Compilation showing cost of maintaining all naval vessels in commission during the year ending June 30, 1896.
F.—Statement showing the value of supplies on hand July 1, 1895; the receipts from purchase and other sources and the expenditures during the year, and the balance on hand June 30, 1896.
G.—Statement of payments through the Paymaster-General's Office on contract, open-purchase, and open-contract vouchers during the fiscal year ending June 30, 1896.
H.—Statement of the value of naval stores received and expended on board ships in commission for the year ending June 30, 1896.
I.—Statement of public sales and reports of deposits during the fiscal year 1896 on account of sales of Government property.
J.—Schedule of proposals received.

There was drawn from the Treasury through the Bureau of Supplies and Accounts during the fiscal year ending June 30, 1896, $26,202,155.37. Of this amount $6,974,435.04 was paid for the construction of new ships. There was expended for supplies purchased in the United States $3,640,420.61.

The cost of maintaining the Navy during the fiscal year, exclusive of any increase to it, and permanent improvements at yards and stations specially appropriated for, was $15,494,862.03.

The cost of maintaining ships in commission was $7,081,908; of navy-yards and stations, $3,767,827.42. There was expended in repairs to vessels $957,521.21. The expenditures on account of the Marine Corps ashore amounted to $736,662.48. The cost to the Navy of the Light-House Establishment was $66,741; of the Coast and Geodetic Survey $179,531.40; of the Fish Commission, $73,208.88. The money and material expended in arming and equipping the Naval Militia, not including material loaned to States, was $27,186.56.

The deposits by seamen under the "Pay of the Navy deposit fund," drawing interest at 4 per cent per annum, amounted on June 30, 1896, to $246,845.76. The amount deposited during the last fiscal year was $168,912. The amount drawn out was $168,178.60. There was paid in interest $10,057.93.

The value of stores issued from general stock during the past year exceeded the receipts from purchase by $721,854.08, showing that care has been exercised in the matter of purchases and that old material has been largely utilized. Under the present system of concentrating supplies in general stock and issuing them to any department needing them, the account, which formerly grew larger year by year, has in the past four years been reduced from $11,190,586.41 to $7,132,969.54.

Stores purchased under the naval supply fund have been largely used. In the comparatively short time since the fund was established it has been turned over three times.

On June 30, 1896, there was in the United States Treasury to the credit of the fund $41,973.11. The adjustments allowed, awaiting transfer of appropriations by the Auditor for the Navy Department, amounted to $9,936.84, the balance of the $200,000 constituting the fund being represented by stock on hand and in transit at the close of the fiscal year. By act of Congress approved June 10, 1896, the fund was increased to $500,000. Supplies to the value of $250,034.21 have already been advertised or contracted for in the present fiscal year, and steps are now being taken to extend the application of the fund to all articles of general supplies named in the allowance books for ships.

Under the law the proceeds of sales of condemned clothing and small stores and of ordnance material are credited to the clothing and small stores fund and the appropriation "ordnance material, proceeds of sales," respectively, and become available for the purchase of new supplies. The proceeds from the sales of other condemned material are covered into the General Treasury under "Miscellaneous receipts, proceeds of sales," the naval service receiving no credit therefor. I recommend that Congress be asked to authorize that such receipts be credited to the naval supply fund in order to protect it from impairment by reason of unavoidable losses. By this means the Naval Establishment would, in effect, exchange obsolete stores for material suitable for the needs of the service. The average amount covered into the General Treasury annually from this source during the past three years was about $13,000.

The number of money vouchers received, examined, and ordered paid by this Bureau during the fiscal year was 20,368, aggregating $11,097,724.69.

The number of requisitions for supplies and services acted on by the Bureau was 11,645. When the vast volume of business represented by these requisitions is considered, it is not surprising that in some cases delays in receiving supplies have occurred, particularly when it is remembered that many of the articles called for are not of an ordinary commercial character, but have to be specially manufactured for the service, and that the inspection of supplies is much more rigid than is usual in commercial transactions.

Every effort is being made by the bureau to prevent delays in the filling of requisitions and in the assembling of outfits for ships. It is believed that through the proposed extended operation of the naval supply fund much of the difficulty now experienced will be obviated. While the Department has perfected a system of accounts well adapted

to the needs of the service, the facilities for storing and handling supplies have not kept pace with the growth and development of the Navy. Complaint has been made of the inability of the principal yards to make prompt shipment of stores and to deliver supplies promptly to vessels at anchor in the vicinity of the yards. The tugs provided are not suitable for this purpose, even if they were available at all times, which is not the case. It is urgently recommended that suitable barges be constructed for the principal yards for this purpose and that storehouses be provided for stores pertaining to vessels temporarily out of commission. It is understood that the establishment of a reserve fleet is now in contemplation by the Department and that the construction of special storehouses for stores pertaining to the vessels of such fleet is under consideration. Should this action be taken, it would not only secure better care for the stores, but would enable the Department to prepare vessels for commission much more expeditiously than is possible under present conditions. The variety and character of the stores pertaining to the outfit of a modern vessel of war are such that facilities which were ample twenty years ago do not meet present requirements.

The demands upon the naval clothing factory have greatly increased within the past few years. It is now manufacturing clothing for the Navy, the Naval Militia, and the Revenue-Cutter Service. The factory is located on the upper floor of an old building at the New York Navy-Yard. The accommodations are entirely inadequate, and the appliances not of the most improved kind. New presses and cutting machines should be provided, and a building better suited for the purpose assigned.

Most excellent and valuable work is being done by the board of officers appointed by the Department to consult with merchants as to the best grades of supplies and to formulate specifications describing them in commercial terms. The results have been most satisfactory to mercantile and manufacturing concerns, and will enable the Department to secure wider competition and better goods at a lower price than ever before. A large number of specifications have already been prepared by the board. This work should be continued until all commercial supplies shall have been described by detailed specifications, and where necessary either illustrated by blue prints or shown by standard samples.

The Bureau has been greatly assisted and the interests of the Navy protected and promoted by the painstaking labor and discriminating work performed by the boards of inspection at the several yards and stations. It is safe to say that never before in the history of the Navy have supplies been subjected to such careful, intelligent, and rigid examination.

All accounts formerly maintained in other bureaus have by order of the Department been discontinued. The scheme of maintaining accounts exclusively in this Bureau and of extending their scope so as to embrace the entire Naval Establishment under titles and subtitles is now complete. Reports of the available balances under the various appropriations, as shown by the liability accounts in this Bureau, are made periodically to the bureaus concerned.

The subject of an emergency ration for the Navy is now under consideration by the Bureau. A special report thereon will be made to the Department.

Very respectfully,

EDWIN STEWART,
Paymaster-General, U. S. Navy.

Hon. HILARY A. HERBERT,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Supplies and Accounts, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES.			
Chief clerk (increase of $700 submitted; Rev. Stat., p. 27, sec. 167)	$1,800.00		
3 clerks of class 4 (Rev. Stat., p. 70, sec. 416; act July 19, 1892, vol. 27, p. 243, sec. 1, and act Mar. 2, 1895)	5,400.00		
4 clerks of class 3 (same act)	6,400.00		
3 clerks of class 2 (same act)	4,200.00		
2 stenographers, at $1,400 each (same act)	2,800.00		
11 clerks of class 1 (same act)	13,200.00		
4 clerks, Class E	4,000.00		
1 assistant messenger (same act)	720.00		
1 laborer	660.00		
		$39,180.00	$36,840.00
PROVISIONS NAVY.			
For provisions and commuted rations for the seamen and marines, which commuted rations may be paid to caterers of messes in cases of death or desertion, upon orders of the commanding officer; commuted rations for officers on sea duty and naval cadets, and commuted rations stopped on account of sick in hospital and credited to the naval hospital fund; subsistence of officers and men unavoidably detained or absent from vessels to which attached under orders (during which subsistence rations to be stopped on board ship and no credit for commutation therefor to be given), and fresh water for drinking and cooking purposes (R. S., p. 733, secs. 3709–3747; act May 12, 1879, vol. 21, p. 3, sec. 1, and act June 10, 1896)	1,275,000.00		
Labor in general storehouses and paymasters' offices in navy-yards, including expenses of handling stores purchased under the naval supply fund, and a chemist, at $2,000 per annum (same act)	130,000.00		
		1,405,000.00	1,405,000.00
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H. (act June 30, 1885, vol. 23, p. 295, sec. 3, and act June 10, 1896):			
In general storehouses—			
2 bookkeepers, at $1,200 each	$2,400.00		
1 assistant bookkeeper	720.00		
1 bill clerk	1,000.00		
1 assistant clerk	720.00		
1 shipping and receiving clerk	1,000.00		
Total	5,840.00		
Navy-yard, Boston, Mass.:			
In general storehouses—			
1 bookkeeper	$1,017.25		
1 shipping clerk	1,000.00		
1 receiving clerk	1,000.00		
In yard pay office—			
1 writer	1,017.25		
Total	4,034.50		
Navy-yard, Brooklyn, N. Y.:			
1 writer to boards of inspection	$900.90		
In general storehouses—			
3 bookkeepers, at $1,200 each	3,600.00		
1 assistant bookkeeper	1,000.00		
1 assistant bookkeeper	720.00		
3 receiving clerks, at $4 per diem each	3,756.00		
1 assistant receiving clerk	1,099.00		
3 shipping clerks, at $1,000 each	3,000.00		
1 writer	1,000.00		
1 bill clerk	1,000.00		
1 assistant bill clerk	720.00		
1 storeman	900.00		
2 leading men, at $2.50 per diem each	1,565.00		
5 pressmen, at $2.76 per diem each	4,319.40		
1 superintendent, coffee mills, at $3 per diem	939.00		
1 box maker, at $3 per diem	939.00		
1 engine tender, at $3.26 per diem	1,020.38		

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.		Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
CIVIL ESTABLISHMENT—continued.				
Navy-yard, Brooklyn, N. Y.—Continued.				
In general storehouses—Continued.				
1 coffee roaster, at $2.50 per diem	$782.50			
1 fireman, at $2 per diem	626.00			
1 messenger at $2.25 per diem	704.25			
In yard pay office—				
1 writer	1,017.25			
1 messenger, at $2.25 per diem	704.25			
Total		$30 312.03		
Navy-yard, League Island, Pa.:				
In general storehouse—				
1 bookkeeper	$1,200.00			
1 assistant bookkeeper	720.00			
Total		1,920.00		
Navy-yard, Washington, D. C.:				
In general storehouses—				
1 bookkeeper	$1,200.00			
1 clerk	1,200.00			
1 receiving clerk	1,000.00			
1 bill clerk	1,000.00			
1 shipping clerk	1,000.00			
In yard pay office—				
1 writer	1,017.25			
Total		6,417.25		
Naval Academy, Annapolis, Md.:				
In general storehouse—				
1 bookkeeper	$1,017.25			
1 receiving and shipping clerk	1,000.00			
Total		2,017.25		
Naval station, Newport, R. I.:				
In general storehouse—				
1 clerk		1,200.00		
Navy-yard, Mare Island, Cal.:				
In general storehouses—				
2 bookkeepers, at $1,200 each	$2,400.00			
2 assistant bookkeepers, at $720 each	1,440.00			
1 receiving clerk	1,000.00			
1 clerk	1,000.00			
1 shipping clerk	1,000.00			
1 bill clerk	1,000.00			
1 assistant clerk	1,000.00			
In yard pay office—				
1 writer	1,017.25			
Total		9,857.25		
Navy-yard, Norfolk, Va.:				
In general storehouses—				
2 bookkeepers at $1,200 each	2,400.00			
2 assistant bookkeepers, at $1,017.25 each	2,034.50			
1 bill clerk	1,000.00			
1 assistant bill clerk	720.00			
1 receiving clerk	942.00			
1 assistant receiving clerk	720.00			
In yard pay office—				
1 writer	1,017.25			
Total		8,833.75		
			$70,432.03	$67,532.03
CONTINGENT.				
For freight and express charges, candles, fuel, books and blanks, stationery, advertising, furniture for general storehouses and pay offices in navy-yards, expenses of naval clothing factory and machinery for same, postage, telegrams, telephones, tolls, ferriages, yeoman's stores, iron safes, newspapers, ice, transportation of stores purchased under the naval supply fund, and other incidental expenses (act June 10, 1896)		50,000.00	50,000.00	50,000.00

STATEMENT A.

GENERAL NAVAL ACCOUNT FOR THE FISCAL YEAR ENDING JUNE 30, 1896.

Appropriations.

DEBITS.

Balances July 1, 1895		$8,998,662.92
Appropriations for fiscal year 1896:		
Act of March 2, 1895	$24,824,510.06	
Urgent deficiency act of February 26, 1896—		
Appropriations of 1895 $50,810.56		
Appropriations of 1896 52,000.00		
	102,810.56	
Deficiency act of June 8, 1896	395,960.77	
Act of June 10, 1896	358,000.00	
		25,681,281.39
Overdrawn appropriations covered by warrant		12,561.25
Interest on Navy pension fund		420,000.00
Covered in to the credit of the following funds:		
Clothing and small store fund	438,160.08	
Naval-hospital fund	96,313.62	
Pay of the Navy, deposit fund	173,944.00	
Ordnance material, proceeds of sales	20,535.61	
Pay, miscellaneous, 1895	2,640.89	
Pay, miscellaneous, 1896	8,240.94	
		739,835.14
Appropriation, "Naval Home, Philadelphia," by transfer from Navy pension fund		79,315.00
Transfers between appropriations by Auditor's adjustments		1,157,457.96
Total		37,089,113.66

CREDITS.

Charged to account of appropriations:	
Navy Department requisitions	$20,373,271.14
Auditor's adjustments	7,721,395.71
Navy pension fund	420,000.00
Charged to overdrawn appropriations:	
Navy Department requisitions	6,467.53
Auditor's adjustments	6,093.72
Surplus fund, 1896	243,625.43
Balances on hand June 30, 1896, to next account	8,318,260.13
Total	37,089,113.66

Balances June 30, 1896.

Annual appropriations—		
1896	$2,058,497.72	
1895	244,183.50	
1894	66,124.83	
1889	146.83	
1888	138.73	
		$2,369,091.61
Increase of the Navy:		
Construction and machinery	2,105,813.84	
Equipment	3,545.76	
Armor and armament	1,575.07	
Rapid-twist guns and reinforce cartridges	11,194.11	
Armor and gun steel	100,001.80	
Nickel	27,089.11	
Submarine torpedo boat	176,165.32	
		2,425,385.01

Funds as follows:		
Pay of the Navy, deposit fund	$247,554.16	
Navy pension fund	420,000.00	
Naval hospital fund	314,800.77	
Clothing and small stores fund	319,164.13	
Naval supply fund	36,562.03	
Payment of Japanese award	29,992.35	
Prize money	449,920.63	
Bounty, destruction of enemies' vessels (act of July 7, 1884)	54,078.54	
		$1,872,072.61
Miscellaneous appropriations:		
Mileage, Navy (Graham decision)	599.45	
Certified claims	15,203.89	
Repairs to U. S. S. *Hartford*	3,987.27	
Repairs to U. S. S. *Constitution*	7,989.36	
Steam machinery, "special"	176,630.48	
Payments on account of purchase of steamers *De Soto* and *Bienville*	24,606.28	
		229,016.73
Continued appropriations for public works		1,422,694.17
Total balance as above		8,318,260.13

Requisitions drawn by the Navy Department during the fiscal year 1896.

Charged to current appropriations	$20,373,271.14
Charged to overdrawn appropriations	6,467.53
General account of advances	6,103,975.92
Total amount advanced	26,483,714.59

ANALYSIS OF ADVANCES.

By the Navy Department:		
Bills of exchange drawn by pay officers of ships	$279,175.92	
Direct payments	2,383.30	
		$281,559.22
Through the Paymaster-General:		
To the fiscal agents, London, England	1,950,000.00	
To pay officers of ships in commission	3,875,074.00	
To disbursing officers to pay vouchers	11,097,724.69	
To disbursing officers to pay labor rolls	4,918,592.98	
To disbursing officers, pay of the Navy	3,618,977.78	
To pay officers of the Marine Corps	741,785.92	
		26,202,155.37
Total advances as above		26,483,714.59

Statement of receipts and payments for fiscal year ending June 30, 1896.

RECEIPTS.

Balance of account July 1, 1895		$9,675,287.06
Appropriation for fiscal year 1896 (see appropriations)		25,681,281.39
Overdrawn appropriations for fiscal year 1896		12,561.25
Interest on Navy pension fund (3 per cent on $14,000,000)		420,000.00
Cash from sales of supplies:		
Bureau of Equipment	$5,246.50	
Bureau of Ordnance	2,896.46	
Bureau of Construction and Repair	274.50	
Bureau of Steam Engineering	241.88	
Bureau of Supplies and Accounts	26,521.95	
Fuel, Marine Corps	935.99	
		36,117.28

Cash from sales of condemned stores:		
At navy-yard, New York, N. Y.	$672.50	
At Naval Academy, Annapolis, Md	1,098.50	
At naval proving grounds, Indian Head	8.60	
At navy-yard, Norfolk, Va	5,070.47	
At Naval Station, Key West, Fla	20.00	
At navy-yard, Pensacola, Fla	10,995.83	
At navy-yard, Mare Island, Cal	18,018.30	
At Naval Hospital, Yokohama, Japan	35.86	
On board ships in commission	237.02	
		$36,157.08
Undrawn pensions from pensioners at Naval Home		19,562.97
Collected from defaulting contractors		5,118.07
Refunded on account of Auditor's settlements		1,199.80
Refunded, miscellaneous		3,336.39
State of New Jersey for Naval Militia		6,596.36
Premium received on sales of bills of exchange		1,533.22
Cash received from rents:		
Wharf at navy-yard, New York, N. Y	250.00	
Wharf at Naval Home, Philadelphia, Pa	300.00	
Wharf at Naval Hospital, Yokohama, Japan	135.58	
		685.58
Gain on appreciation of silver		8,586.85
Interest paid by fiscal agents, London, England		196.47
Damages to vessels (collected)		6,148.91
Cash from purchase of discharge by seamen		4,986.79
Cash from sales of deceased men's effects		963.75
Cash from sales of deserters' effects		1,458.88
Total		35,921,778.10

PAYMENTS.

Secretary of the Interior to pay Navy pensions	340,685.00
Payments to the surplus fund, 1896	243,625.43
To the United States Treasury, as miscellaneous receipts	16,483.32
Expenses of sales of condemned stores	2,341.66
For account of the naval establishment	26,190,117.94
Balance June 30, 1896, to next account	9,128,524.75
Total	35,921,778.10

Analysis of payments for account of the Naval Establishment.

Approved money vouchers:		
Bureau of Yards and Docks	$1,318,104.29	
Bureau of Equipment	629,379.71	
Bureau of Navigation	130,232.06	
Bureau of Ordnance	3,591,972.37	
Bureau of Construction and Repair	347,275.03	
Bureau of Steam Engineering	307,698.79	
Bureau of Supplies and Accounts	714,638.74	
Bureau of Medicine and Surgery	186,420.06	
Secretary's office	3,760,218.45	
		$10,985,939.50
Labor rolls at navy-yards and naval stations:		
Bureau of Yards and Docks	606,823.31	
Bureau of Equipment	369,004.36	
Bureau of Navigation	153,997.32	
Bureau of Ordnance	928,027.83	
Bureau of Construction and Repair	1,823,634.93	
Bureau of Steam Engineering	707,463.08	
Bureau of Supplies and Accounts	216,118.21	
Bureau of Medicine and Surgery	36,883.27	
		4,841,952.31

Pay rolls of navy-yards and naval stations:		
Pay of the Navy	$2,677,017.79	
Provisions (commuted rations)	32,906.40	
		$2,709,924.19
Payments by navy pay agents		943,263.14
Payments on account of the Marine Corps:		
By the quartermaster	213,424.41	
By the paymaster	500,492.55	
By the assistant quartermaster	18,500.00	
		732,416.96
Public bills, ships in commission		915,886.26
Payments on rolls of ships in commission:		
Officers, crew, and marines, for pay	4,154,291.24	
Officers, crew, and marines, for commuted rations	642,612.65	
Miscellaneous	26,286.64	
		4,823,190.53
Direct payments:		
By the Navy Department	2,383.30	
By the Auditor for the Navy Department	128,564.44	
By the fiscal agents, London, England	18,301.07	
By the naval attachés abroad	22,329.86	
		171,578.67
Miscellaneous payments		65,966.38
Total		26,190,117.94

Statement of assets and liabilities.

ASSETS.

Appropriations, balance undrawn		$8,318,260.13
Advances to pay officers of ships in transit		55,000.00
Balances in hand as follows:		
Navy pay agents, for vouchers	$59,865.02	
Navy pay agents, "general account of advances"	95,000.00	
Navy pay agents, "pay of the Navy, etc."	119,994.34	
Pay officers of navy-yards and naval stations for labor rolls	119,121.76	
Pay officers of ships in commission	711,404.77	
Fiscal agents, London, England	114,953.83	
Quartermaster of the Marine Corps	14.72	
Paymaster of the Marine Corps	10,947.24	
Naval attachés abroad	1,955.53	
Advances to officers	486.00	
		1,233,743.21
Payments to seamen for deposits not adjusted by Auditor		42,903.00
Transfers between pay officers, in transit		3,607.75
Deposits in United States Treasury not adjusted by Auditor		44,738.14
Total		9,698,252.23

LIABILITIES.

General account of advances	$73,479.27
Pay of the Navy, deposit fund	218,154.16
Credited by disbursing officers, advanced in July, 1896	600.00
Bills of exchange not paid	192,956.97
Vouchers not reported paid	12,209.08
Deposits by seamen on interest not adjusted by Auditor	42,328.00
Balance as per account, receipts and payments	9,128,524.75
Total	9,698,252.23

Labor rolls at navy-yards and stations:		
Navy-yard, Portsmouth, N. H	$157,805.86	
Navy-yard, Boston, Mass	249,281.05	
Naval station, Newport, R. I	95,629.78	
Naval station, New London, Conn	8,542.50	
Navy-yard, New York, N. Y	1,357,132.60	
Navy-yard, League Island, Pa	217,666.47	
Naval Academy, Annapolis, Md	137,484.33	
Naval Home, Philadelphia, Pa	21,358.55	
Navy-yard, Washington, D. C	890,146.54	
Proving ground, Indian Head, Md	41,620.64	
Navy-yard, Norfolk, Va	748,447.30	
Naval station, Port Royal, S. C	25,904.44	
Naval station, Key West, Fla	8,271.85	
Navy-yard, Pensacola, Fla	30,728.01	
Navy-yard, Mare Island, Cal	836,880.85	
Naval station, Puget Sound, Wash	15,051.54	
		$4,841,952.31
Title G.—Maintenance of navy-yards and stations:		
Pay of officers on duty, etc.—		
Navy-yard, Portsmouth, N. H	53,220.33	
Navy-yard, Boston, Mass	72,467.22	
Naval station, Newport, R. I	64,164.31	
Naval station, New London, Conn	18,407.87	
Navy-yard, New York, N. Y	176,838.46	
Navy-yard, League Island, Pa	58,595.56	
Naval Home, Philadelphia, Pa	22,458.64	
Navy pay office, Baltimore, Md	6,646.59	
Naval Academy, Annapolis, Md	257,389.24	
Navy-yard, Washington, D. C	112,059.22	
Naval proving ground, Indian Head	9,249.53	
Navy-yard, Norfolk, Va	94,292.90	
Naval station, Port Royal, S. C	22,427.78	
Naval station, Key West, Fla	8,262.91	
Navy-yard, Pensacola, Fla	16,410.52	
Navy-yard, Mare Island, Cal	84,739.79	
Naval station, Puget Sound, Wash	12,033.63	
Naval Observatory, Washington, D. C	27,282.47	
		1,116,946.97
Title G.—Naval Hospital, Yokohama, Japan		14,911.42
Title G.—Coaling station, Honolulu, Hawaiian Islands		2,143.30
Title G.—Coaling station, Pichilinque, Mexico		240.00
Title C.—Cost of commission of ships:		
Pay of officers and seamen	4,552,631.56	
Pay of marines	218,344.29	
Commuted rations, officers and seamen	513,607.70	
Commuted rations, marines	43,231.20	
Miscellaneous expenses	106,612.58	
		5,434,427.33
Repairs, ships in commission, paid on ships' bills:		
Bureau of Equipment	296.84	
Bureau of Ordnance	122.75	
Bureau of Construction and Repair	23,555.59	
Bureau of Steam Engineering	15,961.28	
		39,936.46
Supplies purchased by ships in commission, paid on ships' bills:		
Bureau of Equipment	457,828.43	
Bureau of Ordnance	3,913.14	
Bureau of Construction and Repair	40,658.45	
Bureau of Steam Engineering	64,894.36	
Bureau of Supplies and Accounts	200,114.30	
		767,408.68
Title H.—Personnel unassigned:		
Pay of officers on the retired list	947,043.60	
Pay of officers on leave and waiting orders	127,123.58	
Pay of recruits awaiting draft and discharge	197,703.01	
Commuted rations, recruits awaiting draft and discharge	60,531.30	
Pay and expenses of prisoners	10,430.92	
		1,342,832.41

Title K.—Coast and Geodetic Survey:		
Pay of officers and seamen	$152,104.73	
Commuted rations, officers and seamen	27,263.40	
Miscellaneous expenses	163.27	
		$179,531.40
Title L.—Light-House Establishment, pay of officers		66,741.00
Title M.—Fish Commission:		
Pay of officers and seamen	62,081.11	
Commuted rations, officers and seamen	11,004.00	
Miscellaneous expenses	123.77	
		73,208.88
Title O.—Naval Militia:		
Money vouchers	22,281.38	
Pay of seamen	4,843.61	
		27,124.99
Title V.—Freight:		
Money vouchers	49,431.09	
Settled by Auditor for the Navy Department	83,137.73	
		132,568.82
Title V.—Bureau expenses		19,647.96
Title V.—Transportation of men:		
Money vouchers	22,497.25	
Settled by Auditor for the Navy Department	14,496.41	
		36,993.66
Title V.—Miscellaneous expenses	34,528.51	
Royalty for "Lee straight-pull rifle"	20,000.00	
		54,528.51
Title V.—Mileage and travel of officers		146,219.33
Title I.—Pay of officers traveling under orders		10,271.51
Title I.—Special duty, pay of officers:		
Navy Department, chiefs of bureaus and officers on duty		171,166.78
Special duty:		
Hydrographic Office and branches	31,333.57	
Nautical Almanac	10,500.00	
Naval dispensary and museum of hygiene	15,980.14	
Under instruction at War College	17,048.20	
Under instruction abroad	7,735.67	
Court-martial	5,045.74	
Miscellaneous	28,684.80	
		116,328.12
Special duty, boards, etc.:		
Inspection and survey	30,530.97	
Examining and retiring	39,401.00	
Medical examining	13,190.16	
Permanent improvement, New York	3,500.00	
		86,622.13
Special duty, inspection:		
Inspectors of steel	38,590.08	
Inspectors of ordnance	15,070.36	
Cramp & Sons, Philadelphia, Pa	33,469.89	
Bath Iron Works	5,083.29	
Quintard Iron Works	683.84	
Union Iron Works	13,091.51	
Continental Iron Works	2,800.01	
Dubuque Iron Works	209.40	
Newport News Shipbuilding Company	12,200.95	
Columbian Iron Works	5,748.08	
John H. Dialogue & Sons	3,472.05	
Moran Bros. & Co	2,612.34	
Lewis Nixon & Co	1,393.98	
Miscellaneous inspection duty	4,243.57	
		138,669.34
Special duty, miscellaneous:		
Medical attendance	10,897.53	
Marine rendezvous	4,869.61	
Superintendence State, War, and Navy building	2,752.33	
Furlough	252.05	
		18,771.52

Title I.—Special duty, pay of officers—Continued.		
Special duty, detailed:		
Smithsonian Institution	$4,000.00	
Instructors at colleges	4,843.01	
School ship *St. Mary's*	10,464.04	
School ship *Saratoga*	10,812.91	
School ship *Enterprise*	12,206.24	
Supervisor of New York Harbor	3,649.87	
Atlanta Exposition	2,506.84	
		$48,482.91
Payments for account of the Marine Corps:		
Title G.—Marine Barracks—		
Portsmouth, N. H	30,658.10	
Boston, Mass	52,109.21	
Newport, R. I	21,069.39	
New York, N. Y	70,482.35	
League Island, Pa	54,808.15	
Naval Academy, Annapolis, Md	31,355.76	
Naval Home, Philadelphia, Pa	7,429.37	
Washington, D. C	131,922.57	
Norfolk, Va	34,663.69	
Port Royal, S. C	10,654.67	
Mare Island, Cal	74,381.25	
Sitka, Alaska	14,392.99	
Clothing factory, Philadelphia, Pa., material and labor	81,048.42	
Advertising	1,072.33	
Freight and transportation	5,480.56	
Miscellaneous expenses	19,820.89	
Mileage of officers	8,570.65	
Pay of officers and enlisted men, retired	73,634.29	
Pay of officers on special duty	13,067.84	
		736,662.48
Sundry naval expenses:		
Outfits for naval apprentices	21,752.96	
Honorable discharge gratuities to seamen	107,454.00	
Interest paid on deposits by seamen	10,057.93	
Discount on bills of exchange sold by pay officers of ships	32,623.12	
Discount on bills of exchange, remittances to fiscal agents, London	10,111.46	
Admiralty charts	3,381.24	
Expenses fiscal agents, London	157.69	
Interest paid on overdrafts, fiscal agents, London	434.30	
Commission paid to fiscal agents, London	9,018.39	
Expenses dispatch agent, London	2,981.85	
Expenses Board of Visitors, Naval Academy	1,500.00	
Expenses students abroad	4,679.47	
Pay and expenses, naval attachés abroad	17,532.64	
Payments on account of steamers *De Soto* and *Bienville*	17,095.67	
Miscellaneous	4,501.36	
		243,282.08
Miscellaneous payments and certified claims:		
Auditors certificates—		
Pay of the Navy—		
1893	1,264.03	
1894	2,017.47	
1895	8,792.33	
1896	20,915.69	
Certified claims	9,767.98	
Pay of the Marine Corps	1,842.25	
Heirs of deceased officers and seamen	11,498.50	
Miscellaneous certified claims	1,315.37	
		57,413.62
Prize money	2,802.65	
Bounty, destruction of enemies vessels, act of July 7, 1884	127.04	
Extra pay to officers and men who served in the war with Mexico	650.50	

Provisions in transit, June 30, 1896.

EXPENDITURES.

Fourth quarter, 1896:	
From Rufus Parks, general storekeeper, navy-yard, New York—	
To Paymaster Samuel McGowan, U. S. S. *Marblehead*	$934.48
From W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal.—	
To Paymaster Wm. J. Littell, U. S. S. *Alert*	704.54
To Paymaster Thos. H. Hicks, U. S. S. *Marion*	434.94
To Paymaster O. C. Tiffany, U. S. S. *Monterey*	493.25
To Paymaster C. S. Williams, U. S. S. *Detroit*	268.02
To Paymaster J. R. Stanton, U. S. R. S. *Independence*	3.78
From A. S. Kenny, general storekeeper, navy-yard, New York—	
To Paymaster Richard Hatton, U. S. S. *Katahdin*	7.40
To Paymaster Geo. W. Simpson, U. S. S. *Terror*	16.08
To Paymaster Henry G. Colby, U. S. S. *Indiana*	24.27
To Paymaster Geo. A. Lyon, U. S. S. *Fern*	4.30
To Paymaster H. T. Wright, U. S. S. *Newark*	13.58
To Paymaster J. J. Cheatham, U. S. S. *Alliance*	4.62
To Paymaster M. M. Ramsay, U. S. S. *Montgomery*	1.31
To Paymaster H. E. Drury, U. S. S. *Cincinnati*	1.37
To Paymaster Stephen Rand, U. S. S. *Columbia*	6.42
Total	2,918.36

Statement of receipts and expenditures of contingent stores, fiscal year 1896.

RECEIPTS.

Balances, July 1, 1895:		
On hand at navy-yards and stations	$10,578.55	
On board ships in commission	15,129.73	
Contingent stores in transit	191.58	
		$25,899.86
Receipts at navy-yards and stations:		
Purchases	17,893.12	
Gain on issues	50.84	
From other departments	51.47	
Gain by revaluations by surveys	858.95	
From naval supply fund	897.71	
		19,752.09
Receipts on board ships:		
Purchases	916.49	
Gain on issues	75.65	
From departments of ships	29.24	
From naval supply fund	306.85	
		1,328.23
Total		46,980.18

EXPENDITURES.

Expenditures at navy-yards and stations:		
For use (expense account)	$10,392.35	
To other departments	731.25	
Condemned by surveys to loss account	1,531.20	
Condemned by surveys to be sold at auction	860.92	
Loss on issues	.61	
Loss in transit *	33.00	
		$13,549.33
Expenditures on board ships:		
To ships' use	5,628.46	
To departments of ships	533.23	
Sales for cash	3.34	
Condemned by surveys to loss account	3.25	
		6,168.28

* Pacific mail steamer Colima, May 27, 1895.

Miscellaneous:		
From naval supply fund		$5.34
Gains:		
Gain by 10 per cent addition to invoice prices	$32,840.67	
Gain on average prices	2,467.59	
		35,308.26
Total		2,325,611.86

EXPENDITURES.

Payments made for purchases in 1896	$327,893.51	
Less due for purchases in 1895	7,658.26	
	320,235.25	
Due for purchases made in 1896	37,735.27	
		$357,970.52
Accounts settled by the Auditor for the Navy Department:		
Third quarter, 1895	83,903.78	
Fourth quarter, 1895	72,835.47	
First quarter, 1896	87,871.52	
Second quarter, 1896	103,754.32	
Third quarter, 1896	89,794.99	
		438,160.08
Clothing and small stores expended:		
Issued to officers and crew	313,975.82	
Issued to marines	7,820.80	
Issued to supernumeraries not entitled to pay	103.59	
Clothing outfits to apprentices as bounty	21,472.53	
Sold to departments of ships	6,495.23	
Sold for cash	15,946.53	
		365,814.50
Losses:		
Issued for use (expense account)	405.42	
Issued to supernumeraries not entitled to pay	4.71	
Loss by sales at public auction	16,568.62	
Loss on issues	710.64	
Loss by revaluations by surveys	896.39	
Lost in transit*	306.54	
Profit and loss	637.00	
		19,529.32
Total		1,181,474.42
Clothing and small stores fund July 1, 1896		1,144,137.44
Total		2,325,611.86

Statement of the clothing and small stores fund for the fiscal year ending June 30, 1896.

ASSETS.

Cash accounts:		
Balance in United States Treasury to credit of fund	$319,164.13	
Balance in hand of paymaster, navy-yard, New York	1,315.19	
		$320,479.32
Stock accounts:		
On hand at navy-yards and stations	381,822.01	
On hand at naval clothing factory	12,969.81	
On hand condemned to be sold	15,430.12	
On board ships in commission	328,202.60	
Clothing and small stores in transit	34,855.95	
		773,280.49

*Pacific mail steamer *Colima*, May 27, 1895.

Fourth quarter, 1896—Continued.	
From J. A. Smith, general storekeeper, navy-yard, League Island, Pa.—	
To A. S. Kenny, general storekeeper, navy-yard, New York..	$43.23
From Paymaster H. T. Wright, U. S. S. *Newark*—	
To A. S. Kenny, general storekeeper, navy-yard, New York..	585.72
From A. S. Kenny, general storekeeper, navy-yard, New York—	
To W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal	20,338.45
Do	9,510.51
To Paymaster Eugene D. Ryan, U. S. S. *Michigan*	64.36
To Geo. E. Hendee, general storekeeper, navy-yard, Boston, Mass	476.80
Total	35,413.72

RECEIPTS.

Fourth quarter, 1896:	
By A. S. Kenny, general storekeeper, navy-yard, New York—	
From Paymaster Wm. P. Brawley, U. S. S. *Yantic*	$557.77
Balance in transit	34,855.95
Total	35,413.72

STATEMENT C.

Statement of expenditures of money and material at shore stations and objects to which applied during the fiscal year ending June 30, 1896.

TITLE A.—COST OF CONSTRUCTION OF SHIPS.

Vessel.	Money vouchers.	Labor.	Material.	Total.
Maine	$16,303.69	$84,206.05	$122,041.33	$222,551.07
Texas	17,874.01	212,832.74	60,634.55	291,341.30
Amphitrite	288.14	22,775.61	4,126.44	27,190.19
Terror	872.14	187,153.95	51,339.86	239,365.95
Miantonomoh			138,579.42	138,579.42
Monterey	38.49			38.49
New York	15.39	3,667.89		3,683.28
Olympia	1,204.37	3,442.28	1,488.68	6,135.33
Cincinnati		9,000.50		9,000.50
Raleigh		978.79		978.79
Montgomery		283.66		283.66
Marblehead		378.64		378.64
Ericsson	10,587.73	802.20	607.14	11,997.07
Katahdin	184,602.70	12,717.95	2,432.95	199,753.00
Torpedo boat No. 3	35,608.99	1,669.26		37,278.25
Torpedo boat No. 4	35,608.99	1,669.03		37,278.02
Torpedo boat No. 5	35,608.99	1,680.99		37,289.98
Unadilla	6.00	50,243.48	17,265.16	67,514.64
Torpedo boat No. 6	77,760.00	794.77		78,554.77
Torpedo boat No. 7	25,920.00	771.76		26,691.76
Torpedo boat No. 8	28,800.00	2,855.10		31,655.10
Steam tug No. 5		13,232.82	5,432.46	18,665.28
Submarine torpedo boat	22,500.00	889.44		23,389.44
Indiana	762,282.65	38,152.78	8,055.58	808,491.01
Massachusetts	1,002,169.69	7,335.83	3,112.52	1,012,618.04
Oregon	575,740.44	20,496.05	10,302.51	606,539.00
Columbia	1,306.09	726.75		2,032.84
Minneapolis	39,656.33	6,915.93		46,572.26
Brooklyn	856,038.08	12,744.28		868,782.36
Iowa	1,463,687.77	16,288.03		1,479,975.80
Nashville	102,650.00	7,521.65	11,055.83	121,227.48
Wilmington	101,144.53	7,443.27	8,935.10	117,522.90
Helena	101,144.53	7,057.79	8,848.72	117,051.04
Gunboat No. 10	41,457.72	5,228.92		46,686.64
Gunboat No. 11	83,063.22	5,897.39	3,282.19	92,242.80
Gunboat No. 12	83,055.72	5,382.62	3,257.20	91,695.54
Gunboat No. 13	21,171.73	6,140.15		27,311.88
Gunboat No. 14	20,181.73	4,360.38	539.44	25,081.55
Gunboat No. 15	20,541.73	4,261.53	559.06	25,362.32
Kearsarge	1,074.38	15,780.91	142.18	16,997.47
Kentucky	1,074.38	15,967.13	188.89	17,230.40
Puritan	22,902.04	211,918.44	209,046.31	443,866.79
Monadnock	807.52	168,018.99	100,249.00	269,075.51
Total	5,794,749.91	1,179,685.13	771,522.52	7,745,957.50

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE D.—REPAIRS TO SHIPS.

Vessel.	Money vouchers.	Labor.	Material.	Total.
Newark		$2,180.34	$916.84	$3,097.18
Charleston		39.84	6.64	46.48
Petrel		937.10	41.86	978.96
Baltimore		9,988.86	1,671.91	11,660.77
Vesuvius	$200.00	1,872.13	198.33	2,270.46
Maine	54.60	673.14	508.32	1,236.06
Texas	6.05	2,700.66	1,619.29	4,326.00
Cushing		6,801.53	856.84	7,658.37
Puritan		82.20		82.20
Monadnock		624.00		624.00
Amphitrite		6,872.74	2,104.43	8,977.17
Philadelphia		6,942.95	3,326.40	10,269.35
San Francisco			1,368.15	1,368.15
Concord		710.69	23.77	734.46
Bennington		14,339.05	3,729.27	18,068.32
Miantonomoh		5,153.74	617.65	5,771.39
Monterey		12,385.17	3,120.59	15,505.76
New York	3,087.18	31,489.86	13,882.66	48,459.70
Cincinnati		8,574.98	5,846.71	14,421.69
Raleigh		22,743.08	8,529.04	31,272.12
Montgomery	21.80	18,094.31	6,338.10	24,454.21
Marblehead			75.88	75.88
Bancroft		4,651.09	822.20	5,473.29
Machias			354.28	354.28
Castine			269.30	269.30
Katahdin		49.66	4.50	54.16
Indiana		317.02	30.35	347.37
Columbia		9,568.28	5,284.37	14,852.65
Chicago		112,348.67	61,028.70	173,375.37
Atlanta		4,366.58	401.64	4,768.22
Boston		53,319.71	10,897.62	66,217.33
Dolphin		9,731.61	3,165.21	12,896.82
Lancaster	3.56	25,867.97	18,900.64	44,772.17
Pensacola		2,514.86	12.82	2,527.68
Richmond		1,312.96	232.87	1,545.83
Swatara		2,676.22	33.33	2,709.55
Marion		3,813.93	877.83	4,691.76
Mohican		15,590.13	4,129.08	19,719.21
Adams		30,224.44	6,054.58	36,279.02
Alliance		2,617.05	216.61	2,833.66
Essex		5,850.97	1,864.75	7,715.72
Nipsic	150.00			150.00
Thetis		5,090.58	1,734.24	6,824.82
Ranger		4,008.19	249.14	4,257.33
Alarm		3.40		3.40
Michigan		50.52		50.52
Ajax		2,864.18	225.59	3,089.77
Canonicus		1,657.98	243.57	1,901.55
Mahopac		1,991.08	354.25	2,345.33
Manhattan		2,429.54	284.60	2,714.14
Wyandotte	72.38	317.21		389.59
Camanche		3,231.62	311.33	3,542.95
Catskill		1,743.78	330.98	2,074.76
Jason		813.41	71.67	885.08
Lehigh		1,865.76	357.48	2,223.24
Montauk		332.84	124.54	457.38
Nahant		870.50	64.92	935.42
Nantucket	44.05			44.05
Passaic		1,996.17	194.54	2,190.71
Feru		16,695.71	3,525.01	20,220.72
Fortune		4,415.67	699.51	5,115.18
Leyden		36,219.68	7,317.54	43,537.22
Nina		2,972.82	1,169.60	4,142.42
Standish		50,509.23	10,116.62	60,685.85
Triton		2,655.49	336.35	2,991.84
Vermont		565.02	216.89	782.51
Independence		209.35	111.25	320.60
Monongahela		7,334.75	1,636.83	8,971.58
Constellation	800.00			800.00
Franklin		8,038.79	2,230.17	10,268.96
Minnesota		392.90	65.21	458.11
Wabash		171.68	9.13	180.81
Albatross			15.85	15.85
Hartford		71,472.65	20,939.87	92,412.52
Iwana		840.44		840.44
Narkeeta		1,650.58	243.68	1,894.26
Traffic		1,870.22	309.00	2,179.22
Minneapolis	5.00	6,790.33	6,796.88	13,592.21
Olympia	115.32	2.24	13.44	131.00
Unadilla		760.70	427.44	1,188.14
Ericsson		13.20		13.20
Total	4,559.94	682,936.33	230,088.48	917,584.75

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE E.—REAL ESTATE AND CHATTELS.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Navy-yard, Portsmouth, N. H		$219.68	$425.04	$644.72
Navy-yard, Boston, Mass		512.88	3,032.22	3,545.10
Naval station, Newport, R. I	$16,181.33	10,269.21	6,185.34	32,635.88
Naval station, New London, Conn			41.24	41.24
Navy-yard, League Island, Pa	60,266.39	13,070.04	1,568.15	74,904.58
Navy-yard, Brooklyn, N. Y	541,827.45	4,938.62	1,781.57	548,547.64
Naval Academy, Annapolis, Md			4,862.83	4,862.83
Navy-yard, Washington, D. C	3,564.38	17,310.11	17,287.23	38,161.72
Naval Observatory, Washington, D. C	15,920.17			15,920.17
Naval proving ground, Maryland	1,274.40	6,556.29	6,512.54	14,343.23
Navy-yard, Norfolk, Va	27,168.83	41,120.52	20,958.39	89,247.74
Naval station, Port Royal, S. C	74,051.08	6,484.67	2,077.41	82,613.16
Naval station, Key West, Fla	26,662.53		784.10	27,446.63
Navy-yard, Pensacola, Fla		17.10	655.81	672.91
Navy-yard, Mare Island, Cal	25,131.16	27,330.65	13,346.89	65,808.70
Naval station, Puget Sound, Wash	121,144.87	9,317.77		130,462.64
Total	913,192.50	137,147.61	79,518.76	1,129,858.90

TITLE F.—MACHINERY PLANT.

Navy-yard, Portsmouth, N. H.:				
Bureau of Construction and Repair		$3,387.43	$13,002.94	$16,390.37
Navy-yard, Boston, Mass.:				
Bureau of Yards and Docks			224.58	224.58
Bureau of Equipment			99.25	99.25
Bureau of Construction and Repair		7,538.87	1,168.32	8,707.19
Bureau of Steam Engineering			318.00	318.00
Naval Station, Newport, R. I.:				
Bureau of Equipment			5,400.00	5,400.00
Bureau of Navigation			861.01	861.01
Bureau of Ordnance			4,760.33	4,760.33
Bureau of Steam Engineering			591.22	591.22
Navy-yard, New York, N. Y.:				
Bureau of Equipment			12.00	12.00
Bureau of Ordnance			1,332.40	1,332.40
Bureau of Construction and Repair		10,125.15	1,501.61	11,716.76
Bureau of Steam Engineering		289.98	5,682.24	5,972.22
Navy-yard, League Island, Pa.:				
Bureau of Construction and Repair		670.69		670.69
Bureau of Steam Engineering		14.34	1.35	15.69
Naval Academy, Annapolis, Md.:				
Bureau of Navigation			2,401.85	2,401.85
Bureau of Ordnance			10.00	10.00
Bureau of Steam Engineering			1,598.67	1,598.67
Navy-yard, Washington, D. C.:				
Bureau of Ordnance	$100.00	1,519.05	201,645.70	203,264.75
Bureau of Construction and Repair			257.50	257.50
Navy-yard, Norfolk, Va.:				
Bureau of Ordnance			139.05	139.05
Bureau of Construction and Repair		405.56		405.56
Naval station, Key West, Fla.:				
Bureau of Steam Engineering			146.57	146.57
Navy-yard, Mare Island, Cal.:				
Bureau of Construction and Repair		100.67	149.01	249.68
Total	100.00	24,051.74	241,393.60	265,545.34

TITLE G.—GENERAL MAINTENANCE.

Navy-yard, Portsmouth, N. H	$291.54	$71,059.55	$22,329.30	$93,680.39
Navy-yard, Boston, Mass	6,888.76	108,763.03	27,494.54	143,146.33
Torpedo station, Newport, R. I	776.89	55,442.07	23,126.79	79,345.75
Training station, Newport, R. I	745.84	7,540.27	14,599.51	22,885.62
War College, Newport, R. I	1,018.14	4,177.19	3,759.29	8,954.62
Naval station, New London, Conn	756.18	8,542.50	1,906.97	11,205.65
Navy-yard, New York, N. Y	76,432.71	362,846.98	152,885.48	592,165.17
Navy-yard, League Island, Pa	17,389.95	121,542.62	24,804.80	163,737.46
Naval Academy, Annapolis, Md	3,999.02	137,484.33	58,848.43	200,331.78
Navy-yard, Washington, D. C	4,323.65	161,902.88	97,632.22	263,858.75
Naval proving ground, Indian Head, Md	90.10	17,280.62	3,639.42	21,010.14
Navy-yard, Norfolk, Va	17,962.52	192,239.56	88,563.55	298,765.63
Naval station, Port Royal, S. C	2,961.23	19,419.77	29,725.59	52,106.59

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE G.—GENERAL MAINTENANCE—Continued.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Naval station, Key West, Fla	$8,903.43	$8,271.85	$3,687.01	$20,862.29
Navy-yard, Pensacola, Fla	1,431.09	29,919.35	7,187.20	38,537.64
Navy-yard, Mare Island, Cal	7,949.18	197,970.15	97,871.14	303,790.47
Naval station, Puget Sound, Wash	9,740.29	6,178.81	14,754.86	30,673.96
Naval Hospital, Widows Island, Me	790.88	720.00		1,510.88
Naval Hospital, Portsmouth, N. H	4,786.27	1,916.00		6,702.27
Naval Hospital, Chelsea, Mass	16,279.81	3,300.00		19,579.81
Naval Hospital, New York, N. Y	39,103.08	6,116.82		45,219.90
Naval Laboratory, New York, N. Y	32,413.64	3,900.00		36,313.64
Naval Hospital, Philadelphia, Pa	19,783.36	3,236.67		23,020.03
Naval Hospital, Washington, D. C	6,489.76	3,135.00		9,624.76
Naval Dispensary, Washington, D. C	1,544.66			1,544.66
Museum of Hygiene, Washington, D. C	6,291.90	1,320.00		7,611.90
Naval Hospital, Norfolk, Va	28,868.11	3,838.78		32,706.89
Naval Hospital, Pensacola, Fla	861.14	660.00		1,521.14
Naval Hospital, Mare Island, Cal	13,973.77	4,735.00		18,708.77
Naval magazine, Chelsea, Mass	89.00			89.00
Niter depot, Malden, Mass	60.55			60.55
Naval magazine, Dover, N. J	395.00	4,894.38		5,289.38
Naval Home, Philadelphia, Pa	51,380.58	18,121.88		69,502.46
Naval magazine, Fort Mifflin, Pa	6.00			6.00
Navy Pay Office, Baltimore, Md	198.63			198.63
Hydrographic Office, Washington, D. C	7,490.22			7,490.22
Naval magazine, Bellevue, Md	1,027.19			1,027.19
Naval magazine, Craney Island, Va	22.41			22.41
Sacketts Harbor, New York	777.00			777.00
Total	394,293.48	1,566,476.06	672,816.19	2,633,585.73

TITLE V.—MISCELLANEOUS.

Advertising	$14,525.69			$14,525.69
Freight	49,431.09			49,431.09
Incidental expenses of bureaus	19,131.32			19,131.32
Transportation of enlisted men	22,497.25			22,497.25
Mileage claims	14,940.58			14,940.58
Royalty for Lee straight-pull rifle	20,000.00			20,000.00
Printing, stationery, etc., for inspectors; medals, telegraphing, court-martial, and investigation expenses; notary's fees, custom-house charges, etc	26,786.35			26,786.35
Miscellaneous labor, etc., at navy-yards		$161,907.88	$14,129.72	176,037.60
Total	167,312.28	161,907.88	14,129.72	343,349.88

TITLE Z.—CONVERSION ACCOUNT.

Bureau of Yards and Docks:				
Navy-yard, League Island			$21.40	$21.40
Bureau of Equipment:				
Navy-yard, Portsmouth		$350.14	533.79	883.93
Navy-yard, Boston		114,711.14	113,765.09	228,476.23
Navy-yard, New York		30,745.21	29,099.31	59,844.52
Navy-yard, League Island			31.00	31.00
Navy-yard, Washington		2,294.25	2,060.28	4,354.53
Navy-yard, Norfolk		12,234.89	13,622.80	25,857.69
Navy-yard, Mare Island		47,766.81	114,018.48	161,785.29
Bureau of Ordnance:				
Navy-yard, Boston		317.04	5,374.34	5,691.38
Torpedo station, Newport		13,680.27	11,162.43	24,842.70
Navy-yard, New York		22,239.87	300,425.14	322,665.01
Navy-yard, League Island		9,534.99	303,160.54	312,695.53
Navy-yard, Washington		525,247.05	1,031,922.90	1,557,169.95
Naval proving ground		26.50	4.75	31.25
Navy-yard, Norfolk		3,208.70	113,643.73	116,852.43
Navy-yard, Mare Island		15,223.03	406,310.67	421,533.70
Bureau of Construction and Repair:				
Navy-yard, Portsmouth		7,237.02	3,110.18	10,347.20
Navy-yard, Boston		3,690.40	457.85	4,148.25
Navy-yard, New York		56,003.70	20,473.81	76,477.51
Navy-yard, League Island		18,493.34	6,665.01	25,158.35
Navy-yard, Washington		7,500.62	771.02	8,271.64
Navy-yard, Norfolk		86,254.74	83,157.09	119,411.83
Navy-yard, Mare Island		30,871.52	38,695.72	69,567.24

Statement of expenditures of money and materials at shore stations, etc.—Continued.

TITLE Z.—CONVERSION ACCOUNT—Continued.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Bureau of Steam Engineering:				
Navy-yard, Portsmouth		$11,552.88	$5,289.89	$16,842.77
Navy-yard, Boston		9.60		9.60
Navy-yard, New York		32,868.52	36,470.14	69,338.66
Navy-yard, League Island			11.94	11.94
Navy-yard, Washington			1.00	1.00
Navy-yard, Norfolk		6,516.99	6,899.20	13,416.19
Navy-yard, Mare Island		14,449.08	11,313.57	25,762.65
Bureau of Supplies and Accounts:				
Navy-yard, New York		36,777.51	75,334.55	112,112.06
Total		1,059,805.81	2,733,807.62	3,793,613.43

RECAPITULATION.

Titles.	Money vouchers.	Labor.	Material.	Total.
A.—Cost of construction of ships	$5,794,749.91	$1,179,685.13	$771,522.52	$7,745,957.56
D.—Repairs of ships	4,559.94	682,936.33	230,088.48	917,584.75
E.—Real estate and chattels	913,192.59	137,147.64	79,518.76	1,129,858.99
F.—Machinery plant	100.00	24,051.74	241,393.60	265,545.34
G.—General maintenance	394,293.48	1,566,476.06	672,816.19	2,633,585.73
N.—Models and experiments	13,290.25	29,880.15	61,957.52	105,127.92
O.—Naval Militia, arming and equipping	22,281.38	61.57	159,489.89	181,832.84
V.—Miscellaneous	167,312.28	161,907.88	14,129.72	343,349.88
W.—Deterioration and waste (repairing instruments)	8,649.69			8,649.69
Y.—Coal shipped to North Atlantic squadron	27,089.37			27,089.37
Z.—Conversion account (for manufacture)		1,059,805.81	2,733,807.62	3,793,613.43
Expended for specific objects as above	7,345,518.89	4,841,952.31	4,964,724.30	17,152,195.50
X.—Supplies in store	3,640,420.61			3,640,420.61
Total	10,985,939.50	4,841,952.31	4,964,724.30	20,792,616.11

STATEMENT D.

Statement showing the value of real estate and chattels and machinery plant at the several navy-yards and stations, June 30, 1896.

Navy-yards and stations.	Real estate and chattels.	Machinery plant.
Navy-yard, Portsmouth, N. H	$2,844,327.15	$322,565.72
Navy-yard, Boston, Mass	10,893,599.82	1,073,407.60
Naval station, Newport, R. I	663,304.56	101,409.76
Naval station, New London, Conn	128,659.81	6,136.16
Navy-yard, New York, N. Y	14,037,870.15	906,855.53
Navy-yard, League Island, Pa	3,089,116.12	218,784.17
Naval Academy, Annapolis, Md	712,116.77	24,548.84
Navy-yard, Washington, D. C	4,560,111.77	2,355,115.30
Naval proving ground, Maryland	115,534.51	7,511.56
Naval Observatory, Washington, D. C	658,725.54	
Navy-yard, Norfolk, Va	5,913,759.21	575,053.79
Naval station, Port Royal, S. C	592,118.36	892.50
Naval station, Key West, Fla	327,539.37	8,438.12
Navy-yard, Pensacola, Fla	1,886,695.40	45,459.00
Navy-yard, Mare Island, Cal	5,023,482.35	360,171.75
Naval station, Puget Sound, Wash	678,402.94	
Naval magazine, Dover, N. J	72,974.28	
Dry dock, Algiers, La	45,577.93	
Total	52,243,916.04	6,006,349.80

Statement of expenditures of money and materials at shore stations, etc.—Continued.

TITLE Z.—CONVERSION ACCOUNT—Continued.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Bureau of Steam Engineering:				
Navy-yard, Portsmouth		$11,552.88	$5,289.89	$16,842.77
Navy-yard, Boston		9.60		9.60
Navy-yard, New York		32,868.52	36,470.14	69,338.66
Navy-yard, League Island			11.94	11.94
Navy-yard, Washington			1.00	1.00
Navy-yard, Norfolk		6,516.99	6,899.20	13,416.19
Navy-yard, Mare Island		14,449.08	11,313.57	25,762.65
Bureau of Supplies and Accounts:				
Navy-yard, New York		36,777.51	75,334.55	112,112.06
Total		1,059,805.81	2,733,807.62	3,793,613.43

RECAPITULATION.

Titles.	Money vouchers.	Labor.	Material.	Total.
A.—Cost of construction of ships	$5,794,749.91	$1,179,685.13	$771,522.52	$7,745,957.56
D.—Repairs of ships	4,559.94	682,936.33	230,088.48	917,584.75
E.—Real estate and chattels	913,192.59	137,147.64	79,518.76	1,129,858.99
F.—Machinery plant	100.00	24,051.74	241,393.60	265,545.34
G.—General maintenance	394,293.48	1,566,476.06	672,816.19	2,633,585.73
N.—Models and experiments	13,290.25	29,880.15	61,957.52	105,127.92
O.—Naval Militia, arming and equipping	22,281.38	61.57	159,489.89	181,832.84
V.—Miscellaneous	167,312.28	161,907.88	14,129.72	343,349.88
W.—Deterioration and waste (repairing instruments)	8,649.69			8,649.69
Y.—Coal shipped to North Atlantic squadron	27,089.37			27,089.37
Z.—Conversion account (for manufacture)		1,059,805.81	2,733,807.62	3,793,613.43
Expended for specific objects as above	7,345,518.89	4,841,952.31	4,964,724.30	17,152,195.50
X.—Supplies in store	3,640,420.61			3,640,420.61
Total	10,985,939.50	4,841,952.31	4,964,724.30	20,792,616.11

STATEMENT D.

Statement showing the value of real estate and chattels and machinery plant at the several navy-yards and stations, June 30, 1896.

Navy-yards and stations.	Real estate and chattels.	Machinery plant.
Navy-yard, Portsmouth, N. H.	$2,844,327.15	$322,565.72
Navy-yard, Boston, Mass.	10,893,599.82	1,073,407.60
Naval station, Newport, R. I.	663,304.56	101,409.76
Naval station, New London, Conn.	128,659.81	6,136.16
Navy-yard, New York, N. Y.	14,037,870.15	906,855.53
Navy-yard, League Island, Pa.	3,089,116.12	218,784.17
Naval Academy, Annapolis, Md.	712,116.77	24,548.84
Navy-yard, Washington, D. C.	4,560,111.77	2,355,115.30
Naval proving ground, Maryland	115,534.51	7,511.56
Naval Observatory, Washington, D. C.	658,725.54	
Navy-yard, Norfolk, Va.	5,913,759.21	575,053.79
Naval station, Port Royal, S. C.	592,118.36	892.50
Naval station, Key West, Fla.	327,539.37	8,438.12
Navy-yard, Pensacola, Fla.	1,886,695.40	45,459.00
Navy-yard, Mare Island, Cal.	5,023,482.35	360,171.75
Naval station, Puget Sound, Wash.	678,402.94	
Naval magazine, Dover, N. J.	72,974.28	
Dry dock, Algiers, La.	45,577.93	
Total	52,243,916.04	6,006,349.80

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE G.—GENERAL MAINTENANCE—Continued.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Naval station, Key West, Fla	$8,903.43	$8,271.85	$3,687.01	$20,862.29
Navy-yard, Pensacola, Fla	1,431.09	29,919.35	7,187.20	38,537.64
Navy-yard, Mare Island, Cal	7,949.18	197,970.15	97,871.14	303,790.47
Naval station, Puget Sound, Wash	9,740.29	6,178.81	14,754.86	30,673.96
Naval Hospital, Widows Island, Me	790.88	720.00		1,510.88
Naval Hospital, Portsmouth, N. H	4,786.27	1,916.00		6,702.27
Naval Hospital, Chelsea, Mass	16,279.81	3,300.00		19,579.81
Naval Hospital, New York, N. Y	39,103.08	6,116.82		45,219.90
Naval Laboratory, New York, N. Y	32,413.64	3,900.00		36,313.64
Naval Hospital, Philadelphia, Pa	19,783.36	3,236.67		23,020.03
Naval Hospital, Washington, D. C	6,489.76	3,135.00		9,624.76
Naval Dispensary, Washington, D. C	1,544.66			1,544.66
Museum of Hygiene, Washington, D. C	6,291.90	1,320.00		7,611.90
Naval Hospital, Norfolk, Va	28,868.11	3,838.78		32,706.89
Naval Hospital, Pensacola, Fla	861.14	660.00		1,521.14
Naval Hospital, Mare Island, Cal	13,973.77	4,735.00		18,708.77
Naval magazine, Chelsea, Mass	89.00			89.00
Niter depot, Malden, Mass	60.55			60.55
Naval magazine, Dover, N. J	395.00	4,894.38		5,289.38
Naval Home, Philadelphia, Pa	51,380.58	18,121.88		69,502.46
Naval magazine, Fort Mifflin, Pa	6.00			6.00
Navy Pay Office, Baltimore, Md	198.63			198.63
Hydrographic Office, Washington, D. C	7,490.22			7,490.22
Naval magazine, Bellevue, Md	1,027.19			1,027.19
Naval magazine, Craney Island, Va	22.41			22.41
Sacketts Harbor, New York	777.00			777.00
Total	394,293.48	1,566,476.06	672,816.19	2,633,585.73

TITLE V.—MISCELLANEOUS.

Advertising	$14,525.69			$14,525.69
Freight	49,431.09			49,431.09
Incidental expenses of bureaus	19,131.32			19,131.32
Transportation of enlisted men	22,497.25			22,497.25
Mileage claims	14,940.58			14,940.58
Royalty for Lee straight-pull rifle	20,000.00			20,000.00
Printing, stationery, etc., for inspectors; medals, telegraphing, court-martial, and investigation expenses; notary's fees, custom-house charges, etc	26,786.35			26,786.35
Miscellaneous labor, etc., at navy-yards		$161,907.88	$14,129.72	176,037.60
Total	167,312.28	161,907.88	14,129.72	343,349.88

TITLE Z.—CONVERSION ACCOUNT.

Bureau of Yards and Docks:				
Navy-yard, League Island			$21.40	$21.40
Bureau of Equipment:				
Navy-yard, Portsmouth		$350.14	533.79	883.93
Navy-yard, Boston		114,711.14	113,765.09	228,476.23
Navy-yard, New York		30,745.21	29,099.31	59,844.52
Navy-yard, League Island			31.00	31.00
Navy-yard, Washington		2,294.25	2,060.28	4,354.53
Navy-yard, Norfolk		12,234.89	13,622.80	25,857.69
Navy-yard, Mare Island		47,766.81	114,018.48	161,785.29
Bureau of Ordnance:				
Navy-yard, Boston		317.04	5,374.34	5,691.38
Torpedo station, Newport		13,680.27	11,162.43	24,842.70
Navy-yard, New York		22,239.87	300,425.14	322,665.01
Navy-yard, League Island		9,534.99	303,160.54	312,695.53
Navy-yard, Washington		525,247.05	1,031,922.90	1,557,169.95
Naval proving ground		26.50	4.75	31.25
Navy-yard, Norfolk		3,208.70	113,643.73	116,852.43
Navy-yard, Mare Island		15,223.03	406,310.67	421,533.70
Bureau of Construction and Repair:				
Navy-yard, Portsmouth		7,237.02	3,110.18	10,347.20
Navy-yard, Boston		3,690.40	457.85	4,148.25
Navy-yard, New York		56,003.70	20,473.81	76,477.51
Navy-yard, League Island		18,493.34	6,665.01	25,158.35
Navy-yard, Washington		7,500.62	771.02	8,271.64
Navy-yard, Norfolk		36,254.74	83,157.09	119,411.83
Navy-yard, Mare Island		30,871.52	38,695.72	69,567.24

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE E.—REAL ESTATE AND CHATTELS.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Navy-yard, Portsmouth, N. H		$219.68	$425.04	$644.72
Navy-yard, Boston, Mass		512.88	3,032.22	3,545.10
Naval station, Newport, R. I	$16,181.33	10,209.31	6,185.34	32,635.98
Naval station, New London, Conn			41.24	41.24
Navy-yard, League Island, Pa	60,266.39	13,070.04	1,568.15	74,904.58
Navy-yard, Brooklyn, N. Y	541,827.45	4,938.62	1,781.57	548,547.64
Naval Academy, Annapolis, Md			4,862.83	4,862.83
Navy-yard, Washington, D. C	3,564.38	17,310.11	17,287.23	38,161.72
Naval Observatory, Washington, D. C	15,920.17			15,920.17
Naval proving ground, Maryland	1,274.40	6,556.29	6,512.54	14,343.23
Navy-yard, Norfolk, Va	27,168.83	41,120.52	20,958.39	89,247.74
Naval station, Port Royal, S. C	74,051.08	6,484.67	2,077.41	82,613.16
Naval station, Key West, Fla	26,602.53		784.10	27,446.63
Navy-yard, Pensacola, Fla		17.10	655.81	672.91
Navy-yard, Mare Island, Cal	25,131.16	27,330.65	13,346.89	65,808.70
Naval station, Puget Sound, Wash	121,144.87	9,317.77		130,462.64
Total	913,192.50	137,147.64	79,518.76	1,129,858.90

TITLE F.—MACHINERY PLANT.

Navy-yard, Portsmouth, N. H.:				
Bureau of Construction and Repair		$3,387.43	$13,002.04	$16,390.37
Navy-yard, Boston, Mass.:				
Bureau of Yards and Docks			224.58	224.58
Bureau of Equipment			99.25	99.25
Bureau of Construction and Repair		7,538.87	1,168.32	8,707.19
Bureau of Steam Engineering			318.00	318.00
Naval Station, Newport, R. I.:				
Bureau of Equipment			5,400.00	5,400.00
Bureau of Navigation			861.01	861.01
Bureau of Ordnance			4,760.33	4,760.33
Bureau of Steam Engineering			591.22	591.22
Navy-yard, New York, N. Y.:				
Bureau of Equipment			12.00	12.00
Bureau of Ordnance			1,332.40	1,332.40
Bureau of Construction and Repair		10,125.15	1,591.61	11,716.76
Bureau of Steam Engineering		289.98	5,682.24	5,972.22
Navy-yard, League Island, Pa.:				
Bureau of Construction and Repair		670.69		670.69
Bureau of Steam Engineering		14.34	1.35	15.69
Naval Academy, Annapolis, Md.:				
Bureau of Navigation			2,401.85	2,401.85
Bureau of Ordnance			10.00	10.00
Bureau of Steam Engineering			1,598.67	1,598.67
Navy-yard, Washington, D. C.:				
Bureau of Ordnance	$100.00	1,519.05	201,645.70	203,264.75
Bureau of Construction and Repair			257.50	257.50
Navy-yard, Norfolk, Va.:				
Bureau of Ordnance			139.05	139.05
Bureau of Construction and Repair		405.56		405.56
Naval station, Key West, Fla.:				
Bureau of Steam Engineering			146.57	146.57
Navy-yard, Mare Island, Cal.:				
Bureau of Construction and Repair		100.67	149.01	249.68
Total	100.00	24,051.74	241,393.60	265,545.34

TITLE G.—GENERAL MAINTENANCE.

Navy-yard, Portsmouth, N. H	$291.54	$71,059.55	$22,329.30	$93,680.39
Navy-yard, Boston, Mass	6,888.76	108,763.03	27,494.54	143,146.33
Torpedo station, Newport, R. I	776.89	55,442.07	23,126.79	79,345.75
Training station, Newport, R. I	745.84	7,540.27	14,599.51	22,885.62
War College, Newport, R. I	1,018.14	4,177.19	3,759.29	8,954.62
Naval station, New London, Conn	756.18	8,542.50	1,906.97	11,205.65
Navy-yard, New York, N. Y	76,432.71	362,846.98	152,885.48	592,165.17
Navy-yard, League Island, Pa	17,389.95	121,542.02	24,804.89	163,737.46
Naval Academy, Annapolis, Md	3,999.02	137,484.33	58,848.43	200,331.78
Navy-yard, Washington, D. C	4,323.65	161,902.88	97,632.22	263,858.75
Naval proving ground, Indian Head, Md	90.10	17,280.62	3,639.42	21,010.14
Navy-yard, Norfolk, Va	17,962.52	192,239.56	88,563.55	298,765.63
Naval station, Port Royal, S. C	2,961.23	19,419.77	29,725.59	52,106.59

STATEMENT E.

Compilation showing cost of maintaining all naval vessels in commission during fiscal year ending June 30, 1896, excepting medical stores.

Vessels.	Money expended.										
	Pay of officers, crew, and marines.	Rations, commuted.	Special credits, honorable-discharge money, outfits to apprentices, etc.	Incidental expenses (current repairs abroad, freight, pilotage, postage, etc.).							
				Equipment.	Navigation.	Ordnance.	Construction and Repair.	Steam Engineering.	Supplies and Accounts.	Medicine and Surgery.	Secretary's Office.
Adams	$32,947.28	$3,429.30	$489.00	$62.50	$79.40	.....	.....	$26.00	$30.05	$3.55	$110.00
Albatross	36,190.03	6,669.60	.....	.....	.....	.....	.....	.....	23.70	32.65	28.62
Alert	66,043.55	5,222.40	303.00	582.89	715.85	$11.53	$8,172.88	196.58	860.70	262.72	1,446.78
Alliance	68,468.90	12,030.30	720.00	10.00	333.00	.....	5.00	.....	17.57	68.69	189.61
Amphitrite	91,964.41	8,595.90	975.00	835.68	338.25	20.95	3.42	2.46	.....	31.36	78.03
Atlanta	29,221.12	2,777.10	.....	109.00	139.50	.....	.....	1.20	3.00	57.40	214.42
Baltimore	106,449.47	8,954.10	423.00	174.12	96.72	8.04	13.41	494.25	178.15	198.74	1,577.06
Bennington	86,670.18	7,857.90	1,530.00	275.85	205.00	.....	91.20	21.50	73.00	274.34	333.00
Boston	74,640.37	7,186.50	804.00	916.07	117.78	1.05	955.85	200.77	5.15	439.94	903.77
Castine	65,529.11	6,217.50	111.00	478.69	553.63	.94	3,228.51	634.70	113.84	456.49	133.08
Charleston	135,656.98	12,102.90	1,546.00	203.35	415.64	.....	3,101.33	1,721.24	104.86	955.56	599.88
Cincinnati	138,960.35	12,893.70	.....	576.91	.....	.....	.....	.....	3.50	102.12	69.52
Coast Survey vessels	144,400.79	27,255.60	.....	.....	3.40	.....	.....	.....	77	80.80	78.30
Columbia	197,119.75	17,645.70	96.00	3,028.83	106.80	5.49	1,238.18	14.53	51.64	96.77	158.49
Concord	78,439.12	6,958.50	579.00	174.28	142.21	2.86	817.05	51.48	95.56	194.15	393.53
Constellation	120,328.79	40,263.30	10,098.70	.80	74.04	2.21	.....	.84	4.23	541.97	11.04
Cushing	15,666.72	2,533.10	120.00	.....	.....	.....	.....	.....	.....	.....	63.97
Detroit	109,213.59	9,616.80	852.00	2,172.39	123.12	68.98	3,390.54	683.84	215.22	919.70	1,068.82
Dolphin	61,157.51	12,745.80	1,263.00	297.02	.....	.....	.....	6.78	.....	18.80	337.02
Essex	70,129.88	12,449.40	1,026.00	245.92	153.67	.20	41.58	134.41	8.05	22.23	182.27
Fern	25,775.02	4,655.40	108.00	.....	.....	.....	.....	.....	.....	.....	.....
Fish Hawk	18,893.97	4,331.70	.....	.....	.....	.....	.....	.....	.....	.....	38.80
Franklin	66,316.28	11,468.10	5,443.78	.....	.....	.....	.....	.....	.....	18.00	11.69
Independence	61,219.17	10,907.70	14,388.14	.....	.46	.....	.....	.....	22.00	48.25	141.50
Indiana	110,521.52	11,740.20	63.00	1,906.27	3.15	66.15	18.34	4.25	7.35	82.67	59.25
Katahdin	18,263.74	1,553.40	.....	153.52	2.40	.....	.....	.60	3.15	.....	2.00
Lancaster	100,001.36	9,423.90	207.00	239.35	810.96	8.86	434.39	322.96	162.64	274.16	289.95
Machias	69,177.41	6,598.80	336.00	764.01	324.17	4.25	2,201.25	1,433.92	81.32	458.41	877.17
Maine	129,014.49	14,104.20	144.00	846.65	244.00	.....	.....	.....	11.00	21.40	88.80
Marblehead	104,242.07	9,771.90	141.00	673.88	649.43	19.81	432.24	18.20	205.11	964.90	640.05
Marion	69,525.27	6,734.70	1,125.00	47.13	2,532.66	.....	300.00	1,409.84	1,004.37	134.32	718.37
Massachusetts	8,347.78	741.60	.....	75.00	.....	.....	.....	.....	.....	2.50	.....
Michigan	48,944.42	10,458.90	2,144.00	548.31	359.08	214.22	325.54	15.42	3.75	62.75	224.86
Minneapolis	197,260.00	17,503.80	204.00	1,526.41	53.84	1.14	815.00	.10	236.66	194.05	845.18
Minnesota	17,660.46	2,535.90	2,169.94	5.00	17.75	.....	.....	.....	1.56	17.52	3.90

Statement of expenditures of money and materials at shore stations, etc.—Continued.

TITLE Z.—CONVERSION ACCOUNT—Continued.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Bureau of Steam Engineering:				
Navy-yard, Portsmouth		$11,552.88	$5,289.89	$16,842.77
Navy-yard, Boston		9.60		9.60
Navy-yard, New York		32,968.52	36,470.14	69,338.66
Navy-yard, League Island			11.94	11.94
Navy-yard, Washington			1.00	1.00
Navy-yard, Norfolk		6,516.99	6,899.20	13,416.19
Navy-yard, Mare Island		14,449.08	11,313.57	25,762.65
Bureau of Supplies and Accounts:				
Navy-yard, New York		36,777.51	75,334.55	112,112.06
Total		1,059,805.81	2,733,807.62	3,793,613.43

RECAPITULATION.

Titles.	Money vouchers.	Labor.	Material.	Total.
A.—Cost of construction of ships	$5,794,749.91	$1,179,685.13	$771,522.52	$7,745,957.56
D.—Repairs of ships	4,559.94	682,936.33	230,088.48	917,584.75
E.—Real estate and chattels	913,192.59	137,147.64	79,518.76	1,129,858.99
F.—Machinery plant	100.00	24,051.74	241,393.60	265,545.34
G.—General maintenance	394,293.48	1,566,476.06	672,816.19	2,633,585.73
N.—Models and experiments	13,290.25	29,880.15	61,957.52	105,127.92
O.—Naval Militia, arming and equipping	22,281.38	61.57	159,489.89	181,832.84
V.—Miscellaneous	167,312.28	161,907.88	14,129.72	343,349.88
W.—Deterioration and waste (repairing instruments)	8,649.69			8,649.69
Y.—Coal shipped to North Atlantic squadron	27,089.37			27,089.37
Z.—Conversion account (for manufacture)		1,059,805.81	2,733,807.62	3,793,613.43
Expended for specific objects as above	7,345,518.89	4,841,952.31	4,964,724.30	17,152,195.50
X.—Supplies in store	3,640,420.61			3,640,420.61
Total	10,985,939.50	4,841,952.31	4,964,724.30	20,792,616.11

STATEMENT D.

Statement showing the value of real estate and chattels and machinery plant at the several navy-yards and stations, June 30, 1896.

Navy-yards and stations.	Real estate and chattels.	Machinery plant.
Navy-yard, Portsmouth, N. H	$2,844,327.15	$322,565.72
Navy-yard, Boston, Mass	10,893,599.82	1,073,407.60
Naval station, Newport, R. I	663,304.56	101,409.76
Naval station, New London, Conn	128,659.81	6,136.16
Navy-yard, New York, N. Y	14,037,870.15	906,855.53
Navy-yard, League Island, Pa	3,089,116.12	218,784.17
Naval Academy, Annapolis, Md	712,116.77	24,548.84
Navy-yard, Washington, D. C	4,560,111.77	2,355,115.30
Naval proving ground, Maryland	115,534.51	7,511.56
Naval Observatory, Washington, D. C	658,725.54	
Navy-yard, Norfolk, Va	5,913,759.21	575,053.79
Naval station, Port Royal, S. C	592,118.36	892.50
Naval station, Key West, Fla	327,539.37	8,438.12
Navy-yard, Pensacola, Fla	1,886,695.40	45,459.00
Navy-yard, Mare Island, Cal	5,023,482.35	360,171.75
Naval station, Puget Sound, Wash	678,402.94	
Naval magazine, Dover, N. J	72,974.28	
Dry dock, Algiers, La	45,577.93	
Total	52,243,916.04	6,006,349.80

STATEMENT E.

Compilation showing cost of maintaining all naval vessels in commission during fiscal year ending June 30, 1896, excepting medical stores.

Vessels.	Money expended.										
	Pay of officers, crew, and marines.	Rations, commuted.	Special credits, honorable-discharge money, outfits to apprentices, etc.	Incidental expenses (current repairs abroad, freight, pilotage, postage, etc.).							
				Equipment.	Navigation.	Ordnance.	Construction and Repair.	Steam Engineering.	Supplies and Accounts.	Medicine and Surgery.	Secretary's Office.
Adams	$32,947.28	$3,429.30	$489.00	$62.50	$79.40	.....	.....	$26.00	$30.05	$3.55	$110.00
Albatross	36,199.03	6,669.60	.....	.....	.....	.....	.....	.....	23.70	32.65	28.62
Alert	66,043.55	5,222.40	303.00	582.89	715.85	$11.53	$8,172.88	196.58	860.70	262.72	1,446.76
Alliance	68,468.90	12,030.80	720.00	10.00	333.00	.....	5.00	.....	17.57	68.69	189.61
Amphitrite	91,964.41	8,595.90	975.00	835.68	338.25	20.95	3.42	2.46	.....	31.36	78.03
Atlanta	29,221.12	2,777.10	.....	109.90	139.50	.....	.....	1.20	3.00	57.40	214.42
Baltimore	100,449.47	8,954.10	423.00	174.12	96.72	8.04	13.41	494.25	178.15	198.74	1,577.06
Bennington	86,670.18	7,857.90	1,539.00	275.85	205.00	.....	91.20	21.50	73.00	274.34	333.00
Boston	74,640.37	7,186.50	804.00	916.07	117.78	1.05	955.85	200.77	5.15	439.94	903.77
Castine	65,529.11	6,217.50	111.00	478.69	553.63	.94	3,228.51	634.70	113.84	456.49	133.08
Charleston	135,656.98	12,102.90	1,546.00	203.35	415.64	.....	3,101.33	1,721.24	104.86	955.56	899.88
Cincinnati	138,960.35	12,893.70	.....	576.91	.....	.....	.....	.....	3.50	102.12	69.52
Coast Survey vessels	144,400.79	27,255.60	.....	.....	3.40	.....	.....	.....	77	80.80	78.80
Columbia	197,119.75	17,645.70	96.00	3,028.83	106.80	5.49	1,238.18	14.53	51.64	96.77	158.49
Concord	78,439.12	6,958.50	579.00	174.28	142.21	2.86	817.05	51.48	95.56	194.15	393.53
Constellation	120,328.79	40,268.30	10,098.70	.80	74.04	2.21	.....	.84	4.23	541.97	11.04
Cushing	15,666.72	2,533.10	120.00	.....	.....	.....	.....	.....	.....	.....	63.97
Detroit	109,213.59	9,616.80	852.00	2,172.39	123.12	68.98	3,390.54	683.84	215.22	919.70	1,068.82
Dolphin	61,157.51	12,745.80	1,263.00	297.02	.....	.....	.....	6.78	.....	18.80	337.02
Essex	70,129.88	12,449.40	1,026.00	245.92	153.67	.20	41.58	134.41	8.05	22.23	182.27
Fern	25,775.02	4,655.40	108.00	.....	.....	.....	.....	.....	.....	.....	.....
Fish Hawk	18,803.97	4,331.70	.....	.....	.....	.....	.....	.....	.....	.....	38.80
Franklin	66,316.28	11,468.10	5,443.78	.....	.....	.....	.....	.....	.....	18.00	11.69
Independence	61,219.17	10,907.70	14,388.14	.....	.46	.....	.....	.....	22.00	48.25	141.50
Indiana	110,521.53	11,740.20	63.00	1,906.27	3.15	66.15	18.34	4.25	7.35	82.67	59.25
Katahdin	18,263.74	1,553.40	.....	153.52	2.40	.....	.....	.60	3.15	.....	2.00
Lancaster	100,001.36	9,423.90	207.00	239.35	810.96	8.36	434.39	322.96	162.64	274.16	289.95
Machias	69,177.41	6,598.80	336.00	764.01	324.17	4.25	2,201.25	1,433.92	81.32	458.41	877.17
Maine	129,014.49	14,104.20	144.00	846.65	244.00	.....	.....	.....	11.60	21.40	88.80
Marblehead	104,242.07	9,771.90	141.00	673.88	649.43	19.81	432.24	18.20	205.11	964.90	640.05
Marion	69,525.27	6,734.70	1,125.00	47.13	2,532.66	.....	300.00	1,409.84	1,004.37	134.32	718.37
Massachusetts	8,347.78	741.60	.....	75.00	.....	.....	.....	.....	.....	2.50	.....
Michigan	48,944.42	10,458.90	2,144.00	548.31	359.08	214.22	325.54	15.42	3.75	62.75	224.56
Minneapolis	197,260.00	17,503.80	204.00	1,526.41	53.84	1.14	815.00	.10	236.66	194.05	845.18
Minnesota	17,660.46	2,535.90	2,169.94	5.00	17.75	.....	.....	.....	1.56	17.52	3.90

Mohican	17,622.76	1,651.50	186.00	15.30	86.50		1.55	12.35	7.10	3.75	
Monadnock	30,745.05	2,982.30		237.10	.25		50		3.65	46.25	36.48
Monitors	3,123.34	613.80	93.00								
Monocacy	67,367.97	6,435.00	2,772.00	495.28	152.15	20.78	1,002.75	467.70	105.91	464.00	599.91
Monongahela	38,092.55	6,123.60	384.00	67.02	2.15	1.10			14.17	5.10	17.84
Monterey	96,943.33	8,337.90	2,031.00	41.45	287.30	30.75	.50	142.08	22.13	148.99	220.27
Montgomery	106,457.95	10,727.40	1,419.00	324.41	2.08		1.08	7.04	3.32	10.45	59.80
Naval Academy vessels	55,477.12	11,017.80	738.00								
Newark	160,712.91	13,977.60	765.00	137.17	419.37	12.06	2,492.43	2,712.48	338.84	1,218.22	2,670.37
New York	243,437.89	30,399.90	1,809.00	4,218.88	141.15	1.71			13.91	275.68	184.10
Olympia	101,022.07	18,267.30	1,005.00	884.65	140.45	2.47	10,135.55	890.02	87.60	525.32	2,287.87
Petrel	53,356.55	4,758.30	1,386.00	539.08	344.02	44.61	1,319.24	7,156.48	132.03	278.69	528.84
Philadelphia	182,096.76	20,626.10	4,440.00	305.51	1,444.59			29.15		187.38	688.22
Pinta	36,630.48	6,504.30	483.00	4.11	396.50		13.23	7.01	2.30	462.06	33.00
Raleigh	128,478.52	13,689.90	294.00	971.22	5.50	10.80		7.20		19.30	35.82
Ranger	29,600.54	2,760.00	276.00	66.23	95.67	1.25	45.37	70.41	55.93	20.82	213.20
Richmond	46,489.64	6,624.90	12,979.94						10.14	10.95	54.59
San Francisco	176,105.15	16,457.40	1,932.00	1,308.46	321.80	17.76	1,699.25	325.57	362.25	1,192.23	1,880.65
Terror	16,760.61	1,559.10							3.80	7.50	3.05
Texas	71,709.17	7,715.50	72.00	1,898.39	1.08	.06		4.80	3.80	14.09	55.34
Thetis	59,342.90	11,153.87	501.00		1,188.56					77.90	43.26
Vermont	98,661.37	18,008.50	38,851.55		14.00				11.30	126.49	17.60
Wabash	74,628.33	12,795.60	5,137.91							38.25	
Wahneta	2,910.43	766.50									
Yantic	60,841.69	5,820.90	1,083.00	259.63	497.01	228.41	970.70	46.83	38.66	162.00	1,127.76
Yorktown	87,009.12	8,068.80	1,044.00	499.44	160.46		892.83	846.68	43.63	105.11	1,151.25
Total	4,909,904.06	593,780.27	127,091.96	29,204.06	13,796.50	807.94	44,160.69	20,121.66	4,783.96	12,438.04	23,826.65

Montgomery	3,608.03	216.44	7,854.95	3,953.36	12,379.23	8,439.55	24,454.21	179,917.80	12
Naval Academy vessels	3,677.49	505.17	3,843.03	8,918.11	1,022.97	18.94	5,473.29	90,691.92	12
Newark	8,780.16	538.86	3,641.04	4,835.00	43,830.95	18,613.17	3,097.18	268,792.81	12
New York	11,048.91	1,219.48	10,866.27	6,764.22	36,758.03	17,208.81	48,459.70	412,807.64	12
Olympia	4,027.00	1,723.71	10,869.21	5,334.04	66,436.92	18,832.17	131.00	332,602.35	12
Petrel	2,332.87	315.53	1,680.72	1,490.78	12,936.18	5,119.43	978.96	94,698.31	10½
Philadelphia	5,739.66	250.53	12,154.62	3,718.60	24,062.12	12,482.86	10,269.35	278,405.45	12
Pinta	3,266.92	1.08	315.22	1,101.63	4,030.05	151.75	.....	53,402.64	12
Raleigh	4,906.81	900.04	7,566.62	3,040.25	18,571.63	12,551.06	31,272.12	222,320.29	12
Ranger	3,411.64	91.44	95.21	516.67	4,042.31	3,628.32	4,257.33	49,248.33	5½
Richmond	2,949.15	7.70	87.04	521.48	1,457.64	274.04	1,545.83	73,013.04	12
San Francisco	4,062.12	1,316.85	10,363.06	5,613.61	22,154.68	17,176.02	1,368.15	263,657.01	12
Terror	98.61	.....	12.77	248.76	1,046.03	917.05	.....	20,657.28	2½
Texas	2,558.65	.....	3,093.84	2,128.96	8,762.04	7,311.93	4,326.00	109,655.65	5½
Thetis	2,866.42	723.26	32.36	1,205.72	7,467.66	472.50	6,824.82	91,900.23	12
Vermont	11,477.45	340.45	586.15	1,998.13	610.91	241.47	782.51	171,727.88	12
Wabash	8,206.04	54.50	203.98	416.50	422.41	125.78	180.81	97,210.11	12
Wahneta	.....	.....	.....	.....	.....	.....	.....	3,676.93	12
Yantic	5,240.84	55.82	1,395.24	1,727.85	2,707.05	9,185.13	.....	91,389.11	12
Yorktown	3,602.18	439.43	4,319.26	2,489.17	18,117.91	8,070.38	.....	136,859.65	12
Total	193,828.21	20,601.05	209,778.28	123,139.21	693,517.79	379,526.76	492,900.44	7,893,207.53	

STATEMENT F.

Statement showing the value of supplies on hand July 1, 1895, the receipts from purchase and other sources, and the expenditures during the year, and the balance on hand June 30, 1896.

			On hand July 1, 1895, with receipts and expenditures during fiscal year 1896.	Balances on hand June 30, 1896.
Balances on hand:				
Navy-yard, Portsmouth			$790,848.58	$753,477.59
Navy-yard, Boston			1,863,190.62	1,410,359.24
Naval station, Newport			361,848.19	338,364.10
Naval station, New London			11,435.20	10,276.75
Navy-yard, New York			3,787,946.17	3,204,727.04
Navy-yard, League Island			1,012,114.21	1,549,756.19
Naval Academy, Annapolis			185,206.80	119,079.03
Navy-yard, Washington			2,016,633.47	1,035,872.89
Naval Observatory, Washington			29,982.01	32,286.60
Naval proving ground			150,948.82	199,217.47
Navy-yard, Norfolk			1,837,940.46	2,010,459.25
Naval station, Port Royal			2,075.14	215.10
Naval station, Key West			39,203.12	37,367.77
Navy-yard, Pensacola			112,253.70	109,575.30
Navy-yard, Mare Island			2,802,246.10	3,432,147.73
Naval station, Puget Sound			25,488.72	26,932.93
Coaling station, Honolulu, Hawaiian Islands			2,085.87	21,216.77
Coaling station, Pichilinque, Mexico			9,714.99	9,714.99
Shipments between navy-yards in transit			557,333.66	326,934.19
Total on hand July 1, 1895			15,598,495.83	
Received during the fiscal year 1896:				
Under Title X—				
From open purchase		$1,587,948.93		
From contracts		1,843,070.02		
From gain by inventory		304,765.04		
From Title Z, manufactured articles		4,194,807.89		
From Titles B and Y, transfers from ships		2,234,832.98		
			10,165,424.86	
			25,763,920.69	
Expended during the fiscal year 1896:				
To Title A, for use	$771,522.52			
To Title D, for use	230,088.48			
To Title E, for use	79,518.76			
To Title F, for use	241,393.60			
To Title G, for use	672,816.19			
To Title N, for use	61,957.52			
To Title O, for use	159,489.89			
To Title V, for use	14,129.72			
To Title Z, for use	2,733,807.02			
		4,964,724.30		
To Title V, sold to other departments		5,521.15		
To Title W, condemned		1,075,879.20		
To Title W, revalued		538,284.64		
To Titles B and Y, transfers to ships		4,551,530.47		
			11,135,939.76	
Total on hand June 30, 1896			14,627,980.93	14,627,980.93

STATEMENT G.

Statement of payments through the Paymaster-General's Office on contract, open-purchase, and open-contract vouchers during the fiscal year ending June 30, 1896.

Bureau.	Contract.	Open purchase.	Open contract.	Total.
Yards and Docks	$1,092,957.14	$170,543.07	$54,589.18	$1,318,089.39
Equipment	275,488.65	308,021.43	44,621.45	628,131.53
Navigation	39,026.10	54,910.64	36,295.32	130,232.06
Ordnance	2,709,739.28	825,397.18	55,594.34	3,590,730.80
Construction and Repair	107,833.43	228,648.25	10,793.35	347,275.03
Steam Engineering	77,020.10	223,328.94	7,349.75	307,698.79
Supplies and Accounts	4,355,548.08	49,657.98	27,093.61	4,432,299.67
Medicine and Surgery	76,837.45	63,586.30	45,996.31	186,420.06
Secretary's Office	5,154.16	3,691.41	123,688.29	132,533.86
Total	8,739,604.39	1,927,785.20	406,021.60	11,073,411.19

STATEMENT H.

Statement of the value of naval stores received and expended on board ships in commission for the year ending June 30, 1896.

Bureau.	Balance on hand July 1, 1895.	Receipts.	Total receipts.
Equipment	$1,836,595.13	$1,331,449.40	$3,168,044.53
Ordnance	5,914,333.93	3,015,152.11	8,929,486.04
Construction	848,534.59	548,849.46	1,397,384.05
Steam Engineering	377,110.71	859,878.24	1,236,988.95
Supplies and Accounts	396,950.67	1,013,213.90	1,410,164.57
Total	9,373,525.03	6,768,543.11	16,142,068.14

Bureau.	Cost of commission (use and condemned).	Expended, transferred.	Issued to officers, crew, and marines for cash.	Total expenditures.	Balance on hand June 30, 1896.
Equipment	$215,780.77	$1,093,399.39	.....	$1,309,180.16	$1,858,864.37
Ordnance	209,778.28	1,418,198.51	.....	1,627,976.79	7,301,509.25
Construction	123,134.26	262,509.70	.....	385,643.96	1,011,740.09
Steam Engineering	693,517.79	75,533.22	.....	769,051.01	467,937.94
Supplies and Accounts	380,795.19	229,904.50	$376,826.20	987,525.89	422,638.68
Total	1,623,006.29	3,079,545.32	376,826.20	5,079,377.81	11,062,690.33

SUMMARY.

Balance on hand July 1, 1895	$9,373,525.03	
Received during year 1895–96	6,768,543.11	
		$16,142,068.14
Expended to use and condemned	1,623,006.29	
Expended, transferred	3,079,545.32	
Issued to officers, crew, and marines for cash	376,826.20	
		5,079,377.81
Balance on hand June 30, 1896		11,062,690.33
Value of naval stores in transit from yards and stations to ships		148,214.57
Total value of naval stores on board ships and in transit		11,210,904.90

STATEMENT I.

Statement of public sales and reports of deposits during the fiscal year 1896 on account of sales of Government property.

Date of sale.	Place of sale.	By whom deposited.	Gross receipts.	Expenses of sale.	Net proceeds.	Credited to miscellaneous receipts.	Credited to appropriation— Clothing and small stores fund.	Credited to appropriation— Ordnance material; proceeds of sale.
1895.								
May 30	Annapolis, Md	T. T. Caswell	$519.00	$68.75	$450.25	$450.25	.....	.....
Sept. 20	do	do	579.50	64.70	514.80	108.90	.....	$405.90
Oct. 22	Pensacola, Fla	W. B. Wilcox	10,995.83	370.39	10,625.44	1,049.14	.....	9,576.30
Nov. 15	Indian Head, Md	L. A. Frailey	6,434.58	1,040.17	5,394.41	.....	.....	5,394.41
Nov. 27	Norfolk, Va	W. W. Galt	5,070.47	539.82	4,530.65	3,422.74	$763.07	344.84
Dec. 6	Indian Head, Md	L. A. Frailey	8.60	.25	8.35	.....	.....	8.35
1896.								
Jan. 22	New York, N. Y	L. G. Boggs	672.50	193.40	479.10	479.10	.....	.....
Feb. 12	Mare Island, Cal	H. T. Skelding	18,018.30	1,084.60	16,933.70	5,098.63	2,678.72	9,156.35
Feb. 22	Key West, Fla	W. B. Wilcox	20.00	.....	20.00	20.00	.....	.....
Apr. 6	Washington, D. C	L. A. Frailey	25,834.84	818.85	25,015.99	176.79	.....	24,839.20
Apr. 12	Sitka, Alaska	G. G. Rodgers	10.00	.....	10.00	10.00	.....	.....
May 13	Erie, Pa	E. D. Ryan	171.00	19.75	151.25	151.25	.....	.....
May 18	Annapolis, Md	T. T. Caswell	193.50	67.88	125.62	.....	.....	125.62
May 20	Yokohama, Japan	S. L. Heap	35.86	.....	35.86	35.86	.....	.....
June 10	Boston, Mass	G. W. Beaman	2,465.78	53.17	2,412.61	2,412.61	.....	.....
			71,029.76	4,321.73	68,708.03	13,415.27	3,441.79	49,850.97

List of purchasers, with amount received from each—Continued.

Sitka, Alaska, April 20, 1896:	
Frank Carleton	$10.00
Erie, Pa., May 12, 1896:	
John Heineberger	155.00
E. C. Moore	16.00
Total	171.00
Yokohama, Japan, May 20, 1896:	
M. Okada	35.87
Annapolis, Md., May 18, 1896:	
E. H. Wilson & Co	$178.50
J. Nuttall	15.00
Total	193.50
Navy-yard, Boston, Mass., June 10, 1896:	
Ludlow Manufacturing Co	1,315.99
S. S. Vinal & Co	1,149.79
Total	2,465.78

RECAPITULATION.

Annapolis, Md	$1,292.00
Pensacola, Fla	10,995.83
Indian Head, Md	6,443.18
Norfolk, Va	5,070.47
New York, N. Y	672.50
Mare Island, Cal	18,018.30
Key West, Fla	20.00
Washington, D. C	25,834.84
Sitka, Alaska	10.00
Erie, Pa	171.00
Yokohama, Japan	35.86
Boston, Mass	2,465.78
Gross proceeds	71,029.76
Expenses of sales	4,321.73
Net proceeds	66,708.03
Deposited to credit:	
Miscellaneous receipts	13,415.27
Clothing and small stores fund	3,441.79
Ordnance material, proceeds of sale	49,850.97
Total	66,708.03

STATEMENT J.

SCHEDULE OF PROPOSALS RECEIVED.

Schedule of proposals for annual supplies for the Naval Home, Philadelphia, Pa., under Bureau advertisement dated May 9, 1895; opened June 5, 1895.

Class 1.—Brushes, etc.:	
Nelms & Co	$212.53
Chas. S. McNally *	184.93
Shoemaker & Busch	217.23
Class 2.—Brick, etc.:	
Walter T. Bradley Co.*	392.72
Paul J. Field	416.30
Thompson C. Gill & Co	536.90
Class 3.—Signal halyards, etc.:	
Chas. J. Field *	87.40
Class 4.—Clothing:	
Garitee & Son	5,980.58
Wanamaker & Brown	5,754.25
John Wanamaker *	5,520.08
Jacob Reed's Son	5,915.00
Class 5.—Boots and shoes:	
John D. Logan	1,329.50
Robt. Holland	1,260.00
Peter J. Holland *	1,107.00
Class 6.—Bedding, etc.:	
Thos. G. Hood	1,218.79
Willard C. Philpet	(†)
William Hempton	1,259.38
Ellis A. Gimbel	1,267.30
John Wanamaker *	1,062.78
Manhattan Supply Co	1,364.15
Class 7.—Coal:	
M. Jennings & Son	3,092.00
John Marshall	3,412.50
Chas. B. Rees, Son & Co	3,002.50
Thos. McConnell	3,282.50
Peale, Peacock & Kerr	3,114.50
Walter T. Bradley Co	3,517.50
Class 7.—Coal—Continued.	
Geo. M. Henderson	$3,310.00
Frank F. Mathers *	2,940.00
Class 8.—Firewood:	
John Marshall	175.00
Thos. McConnell	262.50
Frank F. Mathers *	168.75
Wm. H. Funston & Bro	210.00
Class 9.—Kitchen utensils, etc.:	
Wm. F. Brown	635.89
Paul J. Field	811.90
Chas. J. Field	633.54
John Wanamaker *	616.84
Class 10.—Furniture:	
William C. Philpet	(†)
Wm. Hempton	366.50
Paul J. Field	360.80
Chas. J. Field *	351.70
John Wanamaker	372.00
Manhattan Supply Co	407.60
Class 11.—Window glass:	
John Lucas & Co	38.97
Chas. S. McNally *	36.72
Chas. J. Field	47.09
Shoemaker & Busch	50.83
Thompson C. Gill & Co	69.31
Class 12.—Hardware:	
Wm. F. Brown	377.50
Paul J. Field	415.24
Chas. J. Field *	374.32
Thompson C. Gill & Co	743.97
Manhattan Supply Co	[illegible]

* Accepted.

† Informal.

Schedule of proposals for fresh provisions and provender for the New York Navy-Yard, under Bureau advertisement dated May 8, 1895; opened June 5, 1895.

Class 1.—165,000 pounds each fresh beef and vegetables:

Andrew Kock	$0.08
	.02 $\frac{95}{100}$
John E. Kinsley	.06
	.02
W. H. Evans	*.05
	*.00
Belford & Morrisson	.08 $\frac{45}{100}$
	.01 $\frac{45}{100}$
William H. Cloonan	.06 $\frac{75}{100}$
	.01 $\frac{75}{100}$

Class 2.—150,000 pounds fresh bread:

Andrew Kock	.03
Anton Behlen*	.02
Belford & Morrisson	.03 $\frac{15}{100}$

Class 3.—200,000 pounds navy biscuit: †

Robert W. Steele	$0.03 $\frac{35}{100}$

Class 4.—120,000 pounds ice:

Andrew Kock	.00 $\frac{17}{100}$
Knickerbocker Ice Co.*	.00 $\frac{10}{100}$
Brooklyn Hygienic Ice Co	.001 $\frac{8}{10}$
Belford & Morrisson	.00 $\frac{18}{100}$

Class 5.—Provender:

Andrew Kock	2,418.00
Robert Foxton	2,650.17
John Moonan	2,211.00
Belford & Morrisson	2,264.90
Charles L. Richerson*	2,184.58

Class 6.—Provender, Dover, N. J.:

John Moonan*	456.00
Belford & Morrisson	503.10

Schedule of proposals for supplies for the navy-yard, League Island, Pa., under Bureau advertisement dated May 8, 1895; opened June 5, 1895.

Class 1.—6,000 pounds each fresh beef and vegetables: ‡

Belford & Morrisson	$0.12
	.03 $\frac{0}{10}$

Class 2.—4,500 pounds fresh bread: ‡

Philadelphia Homemade Bread Co.	.06
Belford & Morrisson	.05

Class 3.—100,000 pounds ice:

Chas. B. Rees Son & Co.*‖	.004
Belford & Morrisson	.004
Knickerbocker Ice Co.‖	.004

Class 4.—Provender for League Island:

Philadelphia Homemade Bread Co.	$1,647.43
Belford & Morrisson	1,239.17
John B. Daish	1,227.56
P. A. Swartz Co.*	1,077.56

Class 5.—Provender for Fort Mifflin:

Philadelphia Homemade Bread Co.	303.18
John B. Daish	290.04
P. A. Swartz Co.*	215.34

Schedule of proposals for fresh provisions and provender for the Naval Academy, Annapolis, Md., under Bureau advertisement dated May 8, 1895; opened June 5, 1895.

Class 1.—5,000 pounds each fresh beef and vegetables:

William J. Brewer	*$0.10
	*.05

Class 2.—4,000 pounds fresh bread:

Martin M. Smith*	.04

Class 3.—20,000 pounds ice:

John B. Flood*	$0.00 $\frac{1}{2}$
J. S. M. Basil	.005

Class 4.—Provender:

J. S. M. Basil	975.00
Henry B. Myers*	935.75
John B. Daish	1,090.45

Schedule of proposals for fresh provisions and provender for the navy-yard, Washington, D. C., under Bureau advertisement dated May 8, 1895; opened June 5, 1895.

Class 1.—2,500 pounds each fresh beef and vegetables.§

Class 2.—2,000 pounds fresh bread.§

Class 3.—85,000 pounds ice:

Independent Ice Co.*	$0.0027 $\frac{1}{2}$

Class 4.—Provender:

B. B. Earnshaw	$1,418.88
Wm. M. Galt & Co.*	1,393.97
John B. Daish	1,410.70

Schedule of proposals for fresh provisions and provender for the navy-yard, Norfolk, Va., under Bureau advertisement dated May 8, 1895; opened June 5, 1895.

Class 1.—50,000 pounds each fresh beef and vegetables:

Aaron Marx	*$0.05
	*.01 $\frac{1}{10}$
Belford & Morrisson	.11
	.02
D. S. Baum	.08
	.03
Louis Wasserman	.08
	.03

Class 2.—50,000 pounds fresh bread:

F. Rieger*	.02 $\frac{1}{10}$

Class 2.—bread—Continued.

Belford & Morrisson	$0.03 $\frac{55}{100}$
J. D. Cabler	.02 $\frac{75}{100}$

Class 3.—95,000 pounds ice:

John K. Gann	.00 $\frac{75}{100}$
J. S. Milier	.00 $\frac{5}{10}$
P. J. Lyons*	.00 $\frac{5}{10}$

Class 4.—Provender:

Thos. J. Barlow	1,277.00
John B. Daish	1,367.10
Lindsay & Co.*	1,069.60
O. L. Williams	1,202.04

Schedule of proposals for fresh provisions and provender for the navy-yard, Pensacola, Fla., under Bureau advertisement dated May 8, 1895; opened June 5, 1895.

Class 1.—3,000 pounds each fresh beef and vegetables:

F. Bauer	$0.13
	.03
John S. Bell	*.08
	*.03

Class 2.—2,000 pounds fresh bread:

F. Bauer	$0.05
John S. Bell	.05
Moses White*	.04

Class 3.—Provender:

F. Bauer*	766.10

* Accepted.
† No award; to be advertised for as needed during the year.
‡ No award; open purchase.
‖ Tie bids.
§ No bids.

Schedule of proposals for supplies for the navy-yard, Washington, D. C., etc.—Continued.

Class 3.—Lime:	
Washington Brick and Terra Cotta Co	$98.00
Clark Bros. Lime and Cement Co.*	58.80
J. T. Walker's Sons	88.20
S. W. Niemeyer	95.00
Geo. L. Neville	122.50
Class 4.—Sand:	
Washington Brick and Terra Cotta Co	100.00
Clark Bros. Lime and Cement Co.	64.00
J. B. Kendall	62.00
J. T. Walker's Sons*	60.00
S. W. Niemeyer	240.00
Geo. L. Neville	120.00
Class 5.—Cement:	
J. T. Walker's Sons*	96.00
Ridgmont Cement and Manufacturing Co	117.60
George L. Neville	150.00
Class 6.—Broken stone:	
Clark Bros. Lime and Cement Co	138.00
Chas. G. Smith & Son	138.00
J. T. Walker's Sons	210.00
The Consolidated Quarry Co.*	132.00
Geo. L. Neville	240.00
Class 7.—Slate:	
Clark Bros. Lime and Cement Co	240.00
J. B. Kendall*	120.00
J. T. Walker's Sons	150.00
Thompson C. Gill & Co	131.97
Class 8.—Piles:	
D. C. Alexander	$262.88
W. T. & F. B. Weaver	200.34
Nathan B. Gaskill	381.60
L. A. Clarke	237.44
Church & Stephenson	291.50
Geo. L. Neville	424.00
Class 9.—Yellow paint:	
Nathan B. Gaskill	237.27
Thomas W. Smith*	224.38
Church & Stephenson	244.76
Geo. L. Neville	260.15
Class 10.—White pine:	
Thomas W. Smith*	156.10
Geo. L. Neville	276.00
Class 11.—Steel angles, etc.:	
Andrew H. Haig	126.16
J. B. Kendall*	106.72
The Carnegie Steel Co	208.91
Thompson C. Gill & Co	118.77
Geo. L. Neville	183.37
Frank H. Woodruff	119.38
Class 12.—Steel rails:	
Andrew H. Haig	469.25
J. B. Kendall	183.22
Thompson C. Gill & Co.*	169.21
Class 13.—Switch timbers, etc.:	
D. C. Alexander	126.03
W. T. & F. B. Weaver*	89.33
L. A. Clarke	125.28

Schedule of proposals for supplies for the navy-yard, New York, under Bureau advertisement dated June 15, 1895; opened July 2, 1895.

Class 1.—Flannel lining:	
John H. Tissot, jr.*	$1,750.00
The Manhattan Supply Co	1,795.00
H. R. Davis	1,820.00
John P. Nawrath	1,794.00
Union Supply Co	1,780.00
Henry N. Limburger	1,800.00
Class 2.—Canvas lining:	
John H. Tissot, jr	397.65
The Manhattan Supply Co	381.00
John P. Nawrath	431.00
Louis Wechsler	426.70
Union Supply Co.*	369.50
Henry N. Limburger	386.65
Class 3.—Twills:	
John H. Tissot, jr	610.00
The Manhattan Supply Co	602.00
John P. Nawrath	640.00
Louis Wechsler	621.00
Union Supply Co.*	590.00
Henry N. Limburger	628.75
Class 4.—Silk laces:	
John H. Tissot, jr	224.56
John P. Nawrath*	180.24
Louis Wechsler	216.46
Union Supply Co	216.45
Wm. H. Horstmann	319.12
Henry N. Limburger	213.57
Class 5.—Linen tape:	
H. R. Davis	334.00
John P. Nawrath	280.00
Deickerhoff-Raffloer Co	290.00
Louis Wechsler	300.00
Wm. H. Horstmann*	270.00
Class 5.—Linen tape—Continued.	
Henry N. Limburger	$308.00
Class 6.—Spool cotton, etc.:	
W. D. Clark & Co	488.11
The Manhattan Supply Co	415.90
John P. Nawrath*	404.00
Louis Wechsler	435.63
Union Supply Co	404.20
William Wilson	422.60
Henry N. Limburger	411.10
Class 7.—Sewing silk:	
W. D. Clark & Co	548.00
Theodore B. Thompson	530.00
John T. Brooks*	458.00
John P. Nawrath	466.00
Brainard & Armstrong Co	478.22
Louis Wechsler	469.00
Union Supply Co	484.50
Wm. H. Horstmann	475.00
Henry N. Limburger	471.00
Class 8.—Cap leathers, etc.:	
John H. Tissot, jr	206.50
The Manhattan Supply Co	245.50
H. R. Davis*	198.90
John P. Nawrath	237.00
Wm. H. Horstmann	200.10
Henry N. Limburger	235.00
Class 9.—Silk neckerchiefs:	
Robt. M. Fair	13,700.00
John P. Nawrath*	11,250.00
Louis Wechsler	12,998.00
Thomas G. Hood	13,519.00
Wm. H. Horstmann	11,720.00

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated June 11, 1895; opened July 2, 1895.

Class 1.—Dredging:	
Chester T. Caler	$4,966.41
Thomas P. Morgan	8,364.48
G. K. Baker*	4,574.32
Virginia Dredging Co	5,489.19
Henry E. Culpepper	6,011.97
Class 2.—Dredging:	
Chester T. Caler	2,000.00
Thomas P. Morgan	3,200.00
G. K. Baker*	1,750.00
Class 2.—Dredging—Continued.	
Virginia Dredging Co	$2,100.00
Henry E. Culpepper	2,300.00
Class 3.—Lifting jacks:	
F. H. Woodruff	124.00
G. L. Neville	120.00
Ira B. White	88.80
Francis Harral	76.00
S. C. Forsaith Machine Co.*	65.50

* Accepted.

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 4.—Piles:	
Duke & Smith	$3,192.00
Henry E. Culpepper*	2,557.80
Class 5.—Gravel, etc.:	
Geo. L. Nevillo*	2,894.60
James Symington	3,838.50
Nimmo & Stakes	2,941.85
John O. Gamage	3,757.60
Class 6.—Cement:	
Geo. L. Neville	4,290.00
National Building Supply Co	4,582.50
Wm. J. Donaldson Co.*	3,763.50
The Manhattan Cement Co	4,660.50
Atlas Cement Co	4,036.50
Sinclair & Babson	4,524.00
John O. Gamage	4,190.55
Class 7.—Hose:	
Geo. L. Neville	171.60
Ira B. White*	109.92
Waterbury Rubber Co	192.00
E. L. Mayers & Co	180.00
Francis Harral	126.00
S. C. Forsaith	176.00
Class 8.—Hardware:	
Geo. L. Neville	$157.20
Manhattan Supply	149.40
Ira B. White	127.80
E. L. Mayers & Co	237.00
Francis Harral*	197.46
Class 9.—Divers' dresses:	
Geo. L. Neville	97.60
A. Schrader's Son*	66.11
Manhattan Supply Co	110.00
E. L. Mayers & Co	128.25
Class 10.—Yellow pine:	
Geo. L. Neville	204.12
Duke & Smith*	102.06
Class 11.—Electrical supplies:	
Ira B. White	1,154.15
Western Electric Co	1,018.15
General Electric Co.*	927.90
Class 12.—Boiler tubes:	
Frank H. Woodruff	3,065.00
G. L. Neville	4,210.00
Allison Manufacturing Co.*	3,659.12
Pancoast & Rogers	3,815.00
E. L. Mayers & Co	7,075.00

Schedule of proposals for supplies for the naval station, Port Royal, S. C., under Bureau advertisement dated June 14, 1895; opened July 2, 1895.

Class 1.—Portland cement:	
Geo. L. Neville	$196.00
S. W. Niemeyer	210.00
A. S. Bacon & Sons	140.00
Wm. M. Bird & Co	131.60
J. K. Attaway	131.60
Hardeeville Brick Co	123.20
Atlas Cement Co	143.92
Andrew Hanley *†	123.20
Class 2.—Rosendale cement:	
Geo. L. Neville	841.50
A. S. Bacon & Sons	813.45
Wm. M. Bird & Co.*	701.25
J. K. Attaway	785.40
Campbell & Scherer	813.45
Andrew Hanley	762.90
Class 3.—Hard-burned brick:	
Washington Brick and Terra Cotta Co	1,740.00
Hankinson & O'Keefe	1,372.25
Campbell & Scherer	1,377.50
Hardeeville Brick Co	(‡)
W. J. Rutherford & Co	1,232.50
Class 4.—Manhole covers:	
Frank H. Woodruff*	30.00
Class 4.—Manhole covers—Continued.	
Thompson C. Gill & Co	$41.94
Ira B. White	145.20
Class 5.—Pipe and fittings:	
Ira B. White	1,046.00
S. C. Forsaith*	712.16
Cameron & Barkley Co	763.90
Class 6.—Oyster shells:	
Geo. L. Neville§	3,900.00
Class 7.—Yellow pine:	
Geo. L. Neville	1,874.47
A. S. Bacon & Sons	993.20
J. K. Attaway & Co	986.53
Campbell & Scherer *	769.50
Class 8.—Brick:	
Washington Brick and Terra Cotta Co	624.00
Hankinson & O'Keefe	491.42
Campbell & Scherer	494.00
Hardeeville Brick Co	(‡)
W. J. Rutherford & Co.*	442.00
Class 9.—Hardware:	
Thompson C. Gill & Co.*	37.30
Geo. L. Neville	44.00
Ira B. White	50.00

Schedule of proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated June 12, 1895; opened July 9, 1895.

Class 1.—Rice:	
Thos. Henry Dowling	$277.50
Pacific Marine Supply Co	297.00
Saml. I. Wormser	287.50
Herman Levi*	252.00
Class 2.—Dried apples;	
Pacific Marine Supply Co	66.80
Saml. I. Wormser	78.75
Herman Levi*	62.00
Class 3.—Dried peaches:	
Pacific Marine Supply Co	70.70
Saml. I. Wormser	78.75
Herman Levi*	67.00
Class 4.—Dried currants:	
Pacific Marine Supply Co	58.60
Saml. I. Wormser	72.50
Herman Levi*	52.00
Class 5.—Dried prunes;	
Pacific Marine Supply Co.*	57.90
Saml. I. Wormser	85.00
Herman Levi	61.50
Class 6.—Dried raisins:	
Pacific Marine Supply Co	42.00
Saml. I. Wormser	62.50
Herman Levi*	39.50
Class 7.—Tomatoes:	
Thos. Henry Dowling	$160.00
S. Foster & Co	161.00
Saml. I. Wormser	156.25
Herman Levi*	144.50
Class 8.—Salmon:	
Thos. Henry Dowling	263.50
Saml. I. Wormser*	258.75
Herman Levi	261.00
Class 9.—Corned beef:	
Thos. Henry Dowling	1,100.00
S. Foster & Co	1,084.00
Saml. I. Wormser	1,200.00
Leroy Hough	1,050.00
Herman Levi*	1,008.70
Class 10.—Tinned mutton:	
Thos. Henry Dowling*	349.50
S. Foster & Co	373.50
Saml. I. Wormser	400.00
Leroy Hough	425.00
Herman Levi	372.00
Class 11.—Tinned beef:	
Thos. Henry Dowling*	349.50
S. Foster & Co	373.50

* Accepted. † Tie. ‡ Informal. § No award.

Schedule of proposals for supplies for the navy-yard, Mare Island, Cal., etc.—Continued.

Class 11.—Tinned beef—Continued.	
Saml. I. Wormser	$400.00
Leroy Hough	425.00
Herman Levi	372.00
Class 12.—Beans:	
Thos. Henry Dowling	585.00
Pacific Marine Supply Co	594.60
Saml. I. Wormser *	530.00
Knowles Steam Pump Works	556.80
Class 13.—Pumps:	
The Dow Steam Pump Works *	2,575.00
Knowles Steam Pump Works	3,610.75
S. C. Forsaith Machine Co	3,525.00
Class 14.—Cement:	
J. H. Powell	89.10
A. S. Carman *	85.86
Wm. Walker	93.15
Class 15.—Sandstone, etc.:	
J. H. Powell	$96.40
A. S. Carman *	64.00
Wm. Walker	71.25
Class 16.—Magnesia sectional covering:	
A. P. Swoyer & Co. *	498.60
Chas. E. Miller	683.40
Wm. H. Barkley	651.10
Wm. B. Morgan	603.00
S. C. Forsaith Machine Co	539.80
Class 17.—Iron pipe, etc.:	
Holbrook, Merrell & Stetson	406.55
Chas. E. Miller	557.16
Dunham, Carrigan & Hayden Co	442.49
Class 18.—Terra-cotta pipe:	
A. S. Carman	415.00
Chas. E. Miller *	405.00
Wm. Walker	413.87

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated June 28, 1895; opened July 16, 1895.

Class 1.—Lumber:	
Geo. L. Neville	$10,575.00
Old Dominion Creosoting Works	8,487.95
A. B. Stevens *	6,505.00
Eppinger & Russell Co.	8,367.50
Class 2.—Lumber:	
Geo. L. Neville	11,220.00
Old Dominion Creosoting Works	10,880.00
Eppinger & Russell Co. *	10,710.00
Class 3.—Oak timber:	
Geo. L. Neville *	607.50
Class 4.—Round iron:	
Geo. L. Neville	66.50
Class 4.—Round iron—Continued.	
J. B. Kendall	$64.60
Ira B. White	73.72
Frank H. Woodruff	79.80
Thompson C. Gill & Co. *	56.62
Class 5.—Spikes:	
Geo L. Neville	463.75
J. B. Kendall	452.25
Ira B. White	519.23
Standard Supply and Equipment Co. *	449.77
Frank H. Woodruff	528.25
Thompson C. Gill & Co	481.60

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated June 29, 1895; opened July 16, 1895.

Class 1.—Russian hemp:	
M. F. Whiton	$9,250.00
S. C. Forsaith Machine Co. *	8,658.00
A. Davis Weld	9,125.00
Class 2.—American hemp:	
S. C. Forsaith Machine Co. *	$11,200.00

Schedule of proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated July 6, 1895; opened July 23, 1895.

Class 1.—Brooms and brushes:	
F. M. McWilliams *	$951.88
The Manhattan Supply Co	1,268.36
John H. Tissot, jr	1,329.76
Francis Harral	1,276.22
James Langmuir	1,197.06
Franklin W. Scott	1,080.42
John A. Driscoll	974.98
Class 2.—Hardware:	
F. M. McWilliams	133.38
The Manhattan Supply Co	119.23
John H. Tissot, jr	133.87
Francis Harral	121.93
James Reilly Repair and Supply Co.	127.65
Brooklyn Hardware and Sporting Goods Co. *	109.44
Class 3.—Alcohol:	
S. C. Forsaith Machine Co	2,580.00
The American Distributing Co. *	2,450.00
Shoemaker & Busch	2,745.00
Class 4.—Paints:	
James Langmuir	717.48
Fiske Bros	713.62
Chas. H. Pleasants *	519.44
Shoemaker & Busch	594.50
Class 5.—Polishing paste:	
F. M. McWilliams	300.00
The Manhattan Supply Co	308.00
James Langmuir	350.00
Fiske Bros. *	292.00
Chas. H. Pleasants	310.00
Class 6.—Concentrated lye:	
John J. O'Rorke *	37.90
The Manhattan Supply Co	94.00
Francis Harral	78.50
Class 6.—Concentrated lye—Continued.	
Geo. L. Neville	$85.00
James Langmuir	77.50
James Reilly Repair and Supply Co.	80.00
Brooklyn Hardware and Sporting Goods Co	80.00
Fiske Bros	75.00
Chas. H. Pleasants	59.90
Class 7.—Linseed oil:	
Fiske Bros	1,290.00
R. P. Rowe *	1,250.00
Class 8.—Orange shellac:	
F. M. McWilliams	615.00
James Langmuir	592.50
Fiske Bros. *	585.00
Chas. H. Pleasants	656.25
Shoemaker & Busch	515.50
John Lucas	662.00
Class 9.—Varnishes:	
F. M. McWilliams	640.00
James Langmuir	540.00
Queens County Varnish Works	761.00
The Union Supply Co	585.00
The Anglo-American Varnish Co. *	511.00
Chas. H. Pleasants	660.00
Shoemaker & Busch	515.50
John Lucas	662.00
Class 10.—Lubricating grease:	
The Manhattan Supply Co	520.00
The Swan & Finch Co	370.00
Fiske Bros. *	318.00
Class 11.—Turpentine:	
Geo. L. Neville	900.00
James Langmuir	820.00

* Accepted.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 11.—Turpentine—Continued.
Fiske Bros.* $690.00
Chas. H. Pleasants 730.00
Class 12.—Brass pipe:
Marc M. Michael 272.26
The Manhattan Supply Co.* 272.10
Geo. L. Neville 328.35
The American Tube Works 297.60
Class 13.—Pipe fittings:
S. C. Forsaith Machine Co 387.66
The Manhattan Supply Co 323.05
Francis Harral 384.65
James Reilly Repair and Supply Co. 353.10
Brooklyn Hardware and Sporting Goods Co 311.39
Class 14.—Tools:
F. M. McWilliams 383.10
The Manhattan Supply Co 417.24
John H. Tissot, jr 422.91
Francis Harral* 370.61
James Reilly Repair and Supply Co. 400.10
Brooklyn Hardware and Sporting Goods Co 394.48
Class 15.—Laundry soap:
F. M. McWilliams 80.00
The Manhattan Supply Co 67.20
John H. Tissot, jr.* 56.00
Fiske Bros 92.32
Chas. E. Ahrens 96.00
Class 16.—Salt pork:
C. J. Caughey 3,925.00
Figge Bros.* 3,870.00
Class 17.—Salt beef:
Halstead & Co 1,617.50
C. J. Caughey* 1,517.50
Class 18.—Pickles:
James F. McGuire* 647.37
F. Foehrenback & Co 667.50
James N. Jeffares 750.00
Class 19.—Tinned vegetables:
John J. O'Rorke* 2,083.50
C. J. Caughey 2,353.50
Chas. H. Ahrens 2,205.00
Sydney Thursby 2,097.00
Class 20.—Mattresses:
Louis Wechsler 5,850.00
J. P. Nawrath 5,960.00
Thomas M. Farley 5,192.00
Wm. F. Bernstein 5,460.00
John Wanamaker 5,960.00
Harry B. Dougherty* 5,140.00
Sydney Thursby 5,700.00
Class 21.—Blankets:
B. Y. Pippey* 7,440.00
John Wanamaker 16,000.00
Class 22.—Tan-colored duck:
F. M. McWilliams* 912.50
John H. Tissot, jr 962.50
Class 23.—Needles:
Louis Wechsler 97.50
The Manhattan Supply Co 87.00
John H. Tissot, jr.* 60.00
Francis Harral 72.00
Class 24.—Forks:
Louis Wechsler 487.50
The Manhattan Supply Co 470.00
John H. Tissot, jr 464.00
Francis Harral 570.00
Brooklyn Hardware and Sporting Goods Co 437.50
John Wanamaker* 431.25
Class 25.—Spoons:
Louis Wechsler 487.50
The Manhattan Supply Co 470.00
John H. Tissot, jr 464.00
Francis Harral 570.00
Brooklyn Hardware and Sporting Goods Co 437.50
John Wanamaker* 431.25
Class 26.—Dust, tar, and whitewash brushes:
F. M. McWilliams* 372.25
The Manhattan Supply Co 389.75
John H. Tissot, jr 417.50
Class 26.—Dust, tar, etc.—Continued.
Franklin W. Scott $415.00
John A. Driscoll 451.75
Class 27.—Squilgees:
F. M. McWilliams 580.00
The Manhattan Supply Co 600.00
John H. Tissot, jr 565.00
Francis Harral* 445.00
Geo. L. Neville 1,250.00
James Reilly Repair and Supply Co. 505.00
Frank H. Woodruff 1,400.00
Class 28.—Scrubbing brushes:
F. M. McWilliams 165.00
Jacob Voelbel 119.25
The Manhattan Supply Co.* 100.50
John H. Tissot, jr 150.00
Francis Harral 156.00
John A. Driscoll 134.70
Class 29.—Deck scrubbing brushes:
F. M. McWilliams 656.00
Jacob Voelbel 698.00
The Manhattan Supply Co 796.00
John H. Tissot, jr.* 640.00
Francis Harral 996.00
John A. Driscoll 796.00
Class 30.—Corn brooms:
F. M. McWilliams 640.00
The Manhattan Supply Co 616.00
John H. Tissot, jr.* 640.00
Francis Harral 596.00
James Reilly Repair and Supply Co. 608.00
Brooklyn Hardware and Sporting Goods Co 756.00
John A. Driscoll 558.00
Class 31.—Cotton canvas, etc.:
F. M. McWilliams 6,352.40
The Manhattan Supply Co 6,895.82
John H. Tissot, jr 6,131.00
G. K. Sheridan & Co 6,153.83
Class 32.—Flax canvas:
F. M. McWilliams 7,781.00
O. Jaffe & Pinkus 8,319.62
The Manhattan Supply Co.* 7,359.00
John H. Tissot, jr 8,006.00
Class 33.—Cotton twine:
F. M. McWilliams* 256.05
The Manhattan Supply Co 317.30
John H. Tissot, jr 292.25
Geo. L. Neville 375.75
Brooklyn Hardware and Sporting Goods Co 283.90
John A. Driscoll 263.02
Class 34.—Beeswax:
F. M. McWilliams 315.87
John J. O'Rorke 318.16
S. C. Forsaith Machine Co 323.00
The Manhattan Supply Co 418.00
John H. Tissot, jr 399.00
Fiske Bros.* 313.50
Chas. H. Pleasants 330.13
Class 35.—Hair for cushions:
F. M. McWilliams 139.50
Louis Wechsler 135.00
Geo. L. Neville 202.50
Brooklyn Hardware and Sporting Goods Co 157.50
Thomas M. Farley 143.55
John Wanamaker* 126.00
Class 36.—Glassware:
Wm. A. Shaw* 8.97
Class 37.—China ware:
Wm. A. Shaw* 58.14
Class 38.—Glassware:
Wm. A. Shaw* 10.52
Class 39.—China ware:
Wm. A. Shaw* 61.04
Class 40.—Glassware:
Wm. A. Shaw* 428.19
Class 41.—Glassware:
Wm. A. Shaw* 100.56
Class 42.—Glassware:
Wm. A. Shaw* 121.74
Class 43.—Glassware:
Wm. A. Shaw* 76.66

*Accepted.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 44.—Glassware:	
Wm. A. Shaw *	$43.01
Class 45.—Glassware:	
Wm. A. Shaw *	68.14
Class 46.—China ware:	
Wm. A. Shaw	734.37
John Wanamaker *	711.48
Class 47.—China ware:	
The Royal Copenhagen Porcelain Co.*	178.50
Class 48.—China ware:	
The Royal Copenhagen Porcelain Co.*	197.56
Class 49.—China ware:	
The Royal Copenhagen Porcelain Co.*	132.16
Class 50.—China ware:	
The Royal Copenhagen Porcelain Co.*	81.06
Class 51.—China ware:	
The Royal Copenhagen Porcelain Co.*	107.64
Class 52.—Carpets:	
W. B. Moses & Sons	1,612.85
Gimbel Bros	(†)
Lord & Taylor *	1,548.25
John Wanamaker	1,023.05
Class 53.—Ingot copper:	
The Manhattan Supply Co	2,480.00
J. B. Kendall *	2,225.10
Jesse Lewisohn	2,275.00
Class 54.—Plate steel:	
The Carnegie Steel Co	920.80
Frank H. Woodruff *	794.19
Class 55.—Angle steel:	
The Carnegie Steel Co.*	3,008.00
Class 56.—Jack chains.‡	
Class 57.—Bolts, rivets, etc.:	
The Manhattan Supply Co.*	$99.45
Class 58.—Brushes:	
F. M. McWilliams *	417.80
Jacob Voelbel	499.12
The Manhattan Supply Co	541.02
John H. Tissot, jr	490.38
Francis Harral	497.00
John A. Driscoll	419.46
Class 59.—Hardware:	
The Manhattan Supply Co	348.87
James Reilly Repair & Supply Co.*	251.12
Class 60.—Drawing instruments, etc.:	
Francis Harral *	48.64
Class 61.—Tools:	
S. C. Forsaith Machine Co	310.25
The Manhattan Supply Co	362.35
Francis Harral *	262.08
Class 62.—Metals:	
The Manhattan Supply Co	95.00
Geo. L. Neville	92.00
James Reilly Repair and Supply Co.	101.00
Brooklyn Hardware and Sporting Goods Co. *	77.50
Class 63.—Rubber:	
F. M. McWilliams	442.50
Marc M. Michael	337.00
James Reilly Repair & Supply Co.*	281.25
Revere Rubber Co	331.25
Class 64.—Pipe fittings.‡	
Class 65.—Diving apparatus.‡	
Class 66.—Airport glasses, etc.‡	
Class 67.—Tools:	
Francis Harral *	525.95

Schedule of proposals for supplies for the naval station, Port Royal, S. C., under Bureau advertisement dated July 12, 1895; opened July 30, 1895.

Class 1.—Oyster shells:	
Thompson C. Gill & Co	$4,350.00
Geo. L. Neville	3,900.00
Justin McCarthy	6,922.50
Class 1.—Oyster shells—Continued.	
Campbell & Scherer *	$3,000.00
Martin Hendricks	7,860.00

Schedule of proposals for coal for United States naval hospitals, under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Naval hospital, Widows Island:	
C. S. Staples	$304.20
Saml. G. French *	260.64
Frederick R. Spear	261.00
Class 2.—Naval hospital, Portsmouth, N. H.:	
Saml. G. French	603.20
Joseph K. Wells	647.40
J. A. & A. W. Walker *	591.50
Class 3.—Naval hospital, Chelsea, Mass.:	
Saml. G. French	1,242.00
J. E. Lewis & Co. *	1,155.00
Chas. A. Campbell	1,215.00
Class 4.—Naval hospital, New York:	
David Duncan & Son	3,759.00
Saml. G. French *	3,402.00
Joseph K. Wells	3,549.00
Moquin-Offerman-Heissenbuttel Coal Co	3,937.50
Peale, Peacock & Kerr	3,979.50
Class 5.—Naval hospital, Philadelphia, Pa.:	
Saml. G. French	1,643.00
Joseph K. Wells	1,755.00
Chas. B. Rees, Son & Co	1,660.00
Joseph B. Van Dusen, jr	1,691.50
Frank F. Mathers	1,677.50
Peale, Peacock & Kerr *	1,633.00
Thomas McConnell	1,957.50
Class 6.—Dispensary, New York, League Island, Pennsylvania:	
Saml. G. French	$23.50
Joseph B. Van Dusen, jr.*	20.00
Frank F. Mathers	25.00
Class 7.—Naval hospital, Washington, D. C.:	
John B. Daish	460.00
John Miller	470.00
Glenn T. Jones and Geo. R. Sheriff.	437.00
Chas. Werner *	421.00
Class 8.—Dispensary, navy-yard, Washington, D. C.:	
John B. Daish *	38.00
John Miller	40.00
Glenn T. Jones and Geo. R. Sheriff.	38.22
Class 9.—Museum of Hygiene, Washington, D. C.:	
John B. Daish	439.25
John Miller	475.00
Glenn T. Jones and Geo. R. Sheriff.	418.65
Chas. Werner *	390.00
Class 10.—Dispensary, Washington, D. C.:	
John B. Daish	95.00
John Miller	100.00
Glenn T. Jones and Geo. R. Sheriff.	96.20
Chas. Werner *	89.00
Class 11.—Naval hospital, Norfolk, Va.:	
Saml. G. French	1,728.80
Geo. W. Taylor & Co. *	1,708.40

* Accepted. † Informal. ‡ No bids.

Schedule of proposals for coal for United States naval hospitals, etc.—Continued.

Class 11.—Naval hospital, etc.—Cont'd.
- Rawlins, Nichols & Co. $1,781.20
- Batchelder & Collins 1,876.00
- W. & J. Parker 1,756.00
- John Miller 1,940.00
- Saml. P. Oast 1,820.00
- The Nottingham & Wrenn Co. 1,737.20
- Peale, Peacock & Kerr 1,713.20

Class 12.—Dispensary, navy-yard, Norfolk, Va.:
- Saml. G. French 36.68
- Batchelder & Collins* 30.80
- W. & J. Parker $32.90

Class 12.—Dispensary, etc.—Continued.
- Saml. P. Oast $38.50
- The Nottingham & Wrenn Co. 36.75

Class 13.—Naval hospital, Pensacola, Fla.:
- Cary & Co.* 100.00

Class 14.—Naval hospital, Mare Island, California:
- John Rosenfeld* 1,172.50
- John L. Howard 1,195.25
- C. H. Jouett (a) 1,580.25; (b) 1,414.00; (c) 1,300.25

Schedule of proposals for fuel for the navy-yard, Portsmouth, N. H., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal, egg size:
- David Duncan & Son $2,240.00
- Peale, Peacock & Kerr 2,285.00
- Joseph K. Wells 2,245.00
- Saml. G. French 2,190.00
- Chas. E. Walker 2,110.00
- J. A. & A. W. Walker* 2,075.00

Class 2.—Anthracite coal, stove and egg sizes:
- David Duncan & Son 2,396.80
- Peale, Peacock & Kerr 2,446.45
- Joseph K. Wells 2,409.65
- Saml. G. French 2,343.30
- Chas. E. Walker 2,260.50
- J. A. & A. W. Walker* 2,221.25

Class 3.—Lehigh anthracite broken coal for foundry cupola use:
- Joseph K. Wells 58.00
- Saml. G. French 55.00

Class 3.—Lehigh, etc., coal—Continued.
- Chas. E. Walker $55.00
- J. A. & A. W. Walker* 49.50

Class 4.—Bituminous coal:
- Chas. E. Walker 90.00
- J. A. & A. W. Walker* 86.00

Class 5.—Hemlock wood:
- Augustus Stevenson* 142.50
- Chas. E. Langton 143.40
- Saml. G. French 162.00
- Chas. E. Walker 150.00
- Wm. G. Brown 178.50
- J. A. & A. W. Walker 150.00

Class 6.—Hardwood charcoal:
- Saml. G. French 74.25
- Chas. E. Walker 110.00
- Wm. G. Brown* 54.36
- J. A. & A. W. Walker 77.00

Class 7.—Coke.†

Schedule of proposals for fuel for the navy-yard, Boston, Mass., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal, broken:
- David Duncan & Son $5,888.00
- Peale, Peacock & Kerr 6,672.00
- Joseph K. Wells 6,240.00
- Chas. A. Campbell 6,128.00
- Saml. G. French 6,304.00
- J. E. Lewis & Co.* 5,568.00
- E. B. Townsend 5,872.00

Class 2.—Anthracite coal, broken:
- David Duncan & Son 3,316.25
- Peale, Peacock & Kerr 3,701.25
- Joseph K. Wells 3,456.25
- Chas. A. Campbell 3,465.00
- Saml. G. French 3,447.50
- J. E. Lewis & Co.* 3,123.75
- E. B. Townsend 3,298.75

Class 3.—Anthracite coal, stove:
- Chas. A. Campbell 62.40
- Saml. G. French 75.00
- J. E. Lewis & Co.* 57.90

Class 4.—Bituminous coal:
- David Duncan & Son 9,730.00

Class 4.—Bituminous coal—Continued.
- Peale, Peacock & Kerr $10,745.00
- Chas. A. Campbell 10,395.00
- J. E. Lewis & Co 10,780.00
- E. B. Townsend* 11,165.00
- Curran & Burton 11,165.00
- Clearfield Bituminous Coal Co. 10,850.00

Class 5.—Bituminous coal:
- David Duncan & Son 994.00
- Peale, Peacock & Kerr 1,064.00
- Chas. A. Campbell* 938.00
- E. B. Townsend 1,184.50
- Clearfield Bituminous Coal Co 1,085.00

Class 6.—Bituminous coal, for smith's use:
- Chas. A. Campbell* 34.20
- E. B. Townsend 36.50

Class 7.—Pine charcoal:
- Wm. G. Brown* 40.00

Class 8.—Hard wood and pine wood:
- Wm. G. Brown* 52.00

Schedule of proposals for fuel for the naval station, Newport, R. I., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal:
- David Duncan & Son $6,567.00
- Peale, Peacock & Kerr 7,348.50
- Joseph K. Wells* 6,220.50
- Saml. G. French 6,237.10
- E. B. Townsend 7,141.50

Class 2.—Bituminous coal:
- David Duncan & Son 2,025.30
- Peale, Peacock & Kerr 2,244.60
- E. B. Townsend 2,213.45

Class 3.—Anthracite coal:
- David Duncan & Son 6,848.00
- Peale, Peacock & Kerr 7,449.00

Class 3.—Anthracite coal—Continued.
- Joseph K. Wells* $6,176.00
- Saml. G. French 6,368.00
- E. B. Townsend 6,926.00

Class 4.—Bituminous coal.‡

Class 5.—Anthracite coal.‡
- David Duncan & Son 930.00
- Joseph K. Wells 794.00
- Saml. G. French* 756.00
- E. B. Townsend 892.00

Class 6.—Pine wood:
- Wm. G. Brown* 168.00

Class 7.—Charcoal.‡

* Accepted. † No bids received. ‡ Open purchase.

Schedule of proposals for fuel for the naval station, New London, Conn., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Bituminous coal:	
David Duncan & Son*	$252.00

Schedule of proposals for fuel for the New York Navy-Yard, under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal:	
David Duncan & Son	$1,736.30
Peale, Peacock & Kerr	1,813.90
Joseph K. Wells	1,610.20
Saml. G. French*	1,590.80
Moquin-Offerman-Heissenbuttel Coal Co	1,770.25
Class 2.—Anthracite coal:	
David Duncan & Son	20,853.50
Peale, Peacock & Kerr	21,981.00
Joseph K. Wells	19,339.00
Saml. G. French*	19,106.00
Moquin-Offerman-Heissenbuttel Coal Co	21,358.75
James J. Convery	(†)
Class 3.—Anthracite coal:	
David Duncan & Son	1,790.00
Peale, Peacock & Kerr	1,890.00
Joseph K. Wells	1,660.00
Saml. G. French*	1,640.00
Moquin-Offerman-Heissenbuttel Coal Co	1,825.00
Class 4.—Bituminous coal:	
Bloomington Mining Co	3,850.00
David Duncan & Son*	3,738.00
Peale, Peacock & Kerr	4,186.00
Moquin-Offerman-Heissenbuttel Coal Co	3,990.00
Davis Coal and Coke Co	4,270.00
Clearfield Bituminous Coal Co	3,990.00
Berwind White Coal Mining Co	4,130.00
Class 5.—Bituminous coal:	
Bloomington Mining Co.*	4,418.00
David Duncan & Son	4,561.04
Peale, Peacock & Kerr	4,801.24
Moquin-Offerman-Heissenbuttel Coal Co	4,577.10
Davis Coal and Coke Co	4,898.30
Clearfield Bituminous Coal Co	4,577.10
Berwind White Coal Mining Co	4,737.70
Class 6.—Bituminous coal:	
Bloomington Mining Co	23,500.00
David Duncan & Son*	22,220.00
Peale, Peacock & Kerr	25,000.00
Davis Coal and Coke Co	25,300.00
Class 6.—Bituminous coal—Continued.	
Clearfield Bituminous Coal Co	$24,000.00
Berwind White Coal Mining Co	25,000.00
Class 7.—Bituminous coal:	
Bloomington Mining Co	2,520.00
David Duncan & Son*	2,440.00
Peale, Peacock & Kerr	2,770.00
Moquin-Offerman-Heissenbuttel Coal Co	2,620.00
Davis Coal and Coke Co	2,820.00
Clearfield Bituminous Coal Co	2,620.00
Berwind White Coal Mining Co	2,720.00
Class 8.—Bituminous coal:	
Bloomington Mining Co	5,670.00
David Duncan & Son*	5,490.00
Peale, Peacock & Kerr	6,142.50
Moquin-Offerman-Heissenbuttel Coal Co	5,962.50
Davis Coal and Coke Co	6,345.00
Clearfield Bituminous Coal Co	5,895.00
Berwind White Coal Mining Co	6,120.00
Class 9.—Bituminous coal:	
Bloomington Mining Co	717.00
David Duncan & Son*	672.00
Peale, Peacock & Kerr	759.00
Moquin-Offerman-Heissenbuttel Coal Co	735.00
Davis Coal and Coke Co	759.00
Clearfield Bituminous Coal Co	720.00
Berwind White Coal Mining Co	750.00
Class 10.—Coke:	
David Duncan & Son*	379.20
Davis Coal and Coke Co	400.00
Class 11.—Pine charcoal:	
Long Island Charcoal Co. *	36.00
John McConnell	42.00
Daniel Bertolet	42.00
Wm. G. Brown	60.00
Class 12.—Pine charcoal:	
Long Island Charcoal Co.*	488.40
John McConnell	569.80
Daniel Bertolet	569.80
Geo. W. Clark	529.10
Class 13.—Pine wood:	
James J. Convery	450.00
Max Morgunstern*	232.20

Schedule of proposals for fuel for the League Island Navy-Yard, under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal:	
Peale, Peacock & Kerr	$2,648.70
Joseph K. Wells	2,620.70
Saml. G. French	2,746.20
Frank F. Mathers	2,677.20
Chas. A. Norton & Co	2,600.20
James J. Convery	3,108.60
Joseph B. Van Dusen, jr.*	2,597.60
Class 2.—Anthracite coal:	
Peale, Peacock & Kerr	3,877.00
Joseph K. Wells*	3,790.50
Saml. G. French	3,997.00
Frank F. Mathers	3,907.00
Class 2.—Anthracite coal—Continued.	
Chas. A. Norton & Co	(†)
James J. Convery	$4,458.95
Joseph B. Van Dusen, jr	3,801.70
Class 3.—Bituminous coal:	
Peale, Peacock & Kerr	712.25
Davis Coal and Coke Co	742.50
Frank F. Mathers	742.50
Clearfield Bituminous Coal Co.*	610.75
Chas. A. Norton & Co	684.75
James J. Convery	948.75
Joseph B. Van Dusen, jr	687.50

Schedule of proposals for fuel for the Naval Academy, Annapolis, Md., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal:	
Henry B. Myers	$790.00
Joseph S. M. Basil	735.00
Peale, Peacock & Kerr	796.00
Saml. G. French	788.00
Class 2.—Bituminous coal:	
Peale, Peacock & Kerr	11,560.00
Davis Coal and Coke Co.*	10,200.00
S. Marland Hamilton & Co	10,880.00
The Merchants' Coal Co	11,000.00
Wm. L. Read	10,880.00
Ehlen Bros	11,320.00
Class 3.—Gas coal:	
The Westmoreland Coal Co	$5,070.00
Wm. L. Read	4,264.00
The Montana Coal and Coke Co.*	3,900.00
Ehlen Bros	4,147.00
J. Edw. Chapman	4,160.00
Class 4.—Bituminous coal:	
Peale, Peacock & Kerr	2,023.00
Davis Coal and Coke Co.*	1,785.00
S. Marland Hamilton & Co	1,904.00
The Merchants' Coal Co	1,925.00
Wm. L. Read	1,904.00
Ehlen Bros	1,981.00

* Accepted.

† Informal.

Schedule of proposals for fuel for the navy-yard, Washington, D. C., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Bituminous coal:	
Peale, Peacock & Kerr	$3,390.00
Davis Coal and Coke Co	2,690.00
John B. Daish	3,000.00
The Allegheny Co	2,680.00
Johnson Bros	3,140.00
Wm. L. Read *	2,675.00
J. Edw. Chapman	2,860.00
Class 2.—Bituminous coal:	
Peale, Peacock & Kerr	1,695.00
Davis Coal and Coke Co	1,345.00
John B. Daish	1,500.00
The Allegheny Co	1,340.00
Johnson Bros	1,570.00
Wm. L. Read *	1,337.50
J. Edw. Chapman	1,430.00
Class 3.—Bituminous coal:	
Peale, Peacock & Kerr	16,950.00
Davis Coal and Coke Co	13,450.00
John B. Daish	15,000.00
The Allegheny Co	13,400.00
Johnson Bros	15,700.00
Wm. L. Read *	13,375.00
J. Edw. Chapman	14,300.00
Class 4.—Anthracite coal:	
Peale, Peacock & Kerr	632.75
Class 4.—Anthracite coal—Continued.	
John B. Daish	$580.00
Glenn T. Jones and Geo. R. Sheriff *	575.75
J Edw. Chapman	720.00
Class 5.—Anthracite coal:	
Peale, Peacock & Kerr	737.80
John B. Daish	739.50
Wm. L. Read	688.50
Glenn T. Jones and Geo. R. Sheriff	686.80
Chas. Werner *	673.20
J. Edw. Chapman	697.00
Class 6.—Anthracite coal:	
John B. Daish	40.50
Glenn T. Jones and Geo. R. Sheriff *	40.40
J. Edw. Chapman	42.50
Class 7.—Bituminous coal:	
John B. Daish	122.50
Johnson Bros.*	78.50
J. Edw. Chapman	110.00
Class 8.—Pine charcoal:	
M. M. Makefield *	1,125.00
C. Loane & Co	1,425.00
John F. Clarke	1,462.50
Geo. W. Clark	1,500.00
W. T. & F. B. Weaver	1,162.50
Class 9.—Coke.†	

Schedule of proposals for fuel for the navy-yard, Norfolk, Va., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Anthracite coal:	
W. & J. Parker	$582.00
Samuel G. French	599.40
Batchelder & Collins	618.55
Geo. W. Taylor & Co	630.75
Nottingham & Wrenn Co	584.70
Saml. P. Oast	692.50
Class 2.—Anthracite coal:	
W. & J. Parker	500.00
Peale, Peacock & Kerr	505.00
Saml. G. French	555.00
Batchelder & Collins	531.25
Geo. W. Taylor & Co	502.50
Nottingham & Wrenn Co.*	497.50
Saml. P. Oast	531.25
Class 3.—Anthracite coal:	
W. & J. Parker	924.00
Peale, Peacock & Kerr	943.80
Saml. G. French & Co	998.80
Batchelder & Collins	935.00
Geo. W. Taylor & Co.*	884.40
Nottingham & Wrenn Co	930.60
Saml. P. Oast	935.00
Class 4.—Bituminous coal:	
Davis Coal and Coke Co.*	3,048.00
Wm. Lamb	3,120.00
Geo. W. Taylor & Co	3,408.00
Class 5.—Bituminous coal:	
Davis Coal and Coke Co.*	6,731.00
Wm. Lamb	6,890.00
Class 5.—Bituminous coal—Continued.	
Geo. W. Taylor & Co	$7,526.00
Class 6.—Bituminous coal:	
Davis Coal and Coke Co.*	11,650.00
Wm. Lamb	13,000.00
Geo. W. Taylor & Co	12,700.00
Class 7.—Bituminous coal:	
Davis Coal and Coke Co.*	1,270.00
Wm. Lamb	1,300.00
Geo. W. Taylor & Co	1,420.00
Class 8.—Bituminous coal:	
Davis Coal and Coke Co.*	4,660.00
Wm. Lamb	5,200.00
Geo. W. Taylor & Co	5,880.00
Class 9.—Bituminous coal:	
Davis Coal and Coke Co.*	932.00
Wm. Lamb	1,040.00
Geo. W. Taylor & Co	1,016.00
Class 10.—Anthracite coal:	
W. & J. Parker *	146.00
Batchelder & Collins	159.25
Geo. W. Taylor & Co	161.00
Nottingham & Wrenn Co	165.25
Saml. P. Oast	157.50
Class 11.—Coke.†	
Class 12.—Pine charcoal:	
Geo. L. Neville	202.35
Batchelder & Collins	225.00
Geo. W. Clark *	180.00

Schedule of proposals for fuel for the naval station, Port Royal, S. C., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Bituminous coal:	
Davis Coal and Coke Co	$1,539.00
S. Marland Hamilton & Co.*	1,327.50
Class 2.—Wood:	
W. E. Campbell *	$163.75

Schedule of proposals for fuel for the navy-yard, Pensacola, Fla., under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Pine wood:	
F. Bauer *	$119.00
Class 1.—Pine wood—Continued.	
Benjamin Dolphin	$120.00

* Accepted.

† Open purchase.

Schedule of proposals for fuel for the navy-yard, Mare Island, California, under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Bituminous coal:	
John Rosenfeld	$25,200.00
John L. Howard	27,855.00
	*30,285.00
	27,630.00
John C. Wilson	26,550.00
Saml. G. French	31,230.00
	29,880.00
C. H. Jouett	25,155.00
Charles R. Allen	25,425.00
Class 2.—Bituminous coal:	
John Rosenfeld	8,700.00
John L. Howard	9,435.00
	*10,245.00
	9,360.00
Saml. G. French	11,010.00
	10,410.00
C. H. Jouett	8,535.00
Charles R. Allen	8,550.00
Class 3.—Bituminous coal:	
John Rosenfeld	3,150.00
John L. Howard	3,020.00
	*3,260.00
	2,975.00
Saml. G. French	3,970.00
	3,820.00
C. H. Jouett	3,095.00
Charles R. Allen	3,175.00
Class 4.—Bituminous coal:	
John Rosenfeld	12,700.00
John L. Howard	12,080.00
	13,040.00
	11,900.00
Saml. G. French	15,880.00
	15,280.00
C. H. Jouett*	11,160.00
Class 4.—Bituminous coal—Continued.	
Charles R. Allen	$12,200.00
Class 5.—Bituminous coal:	
John Rosenfeld	10,889.00
John L. Howard	10,346.52
	11,168.76
	10,192.35
Saml. G. French	13,601.22
	13,087.32
C. H. Jouett*	8,442.54
Charles R. Allen	11,026.50
Class 6.—Bituminous coal:	
John L. Howard	98.30
	98.30
	98.30
John C. Wilson	105.00
C. H. Jouett*	92.40
Class 7.—Bituminous coal:	
John L. Howard	2,211.75
	2,211.75
	2,211.75
John C. Wilson	2,362.50
C. H. Jouett*	2,079.00
Class 8.—Anthracite coal:	
John Rosenfeld	706.50
John C. Wilson*	675.00
Class 9.—Welsh coke.†	
Class 10.—Hardwood charcoal:	
Wm. Walker*	52.00
Class 11.—Anthracite coal:	
John Rosenfeld	954.50
John C. Wilson*	900.00
Class 12.—Crude oil, for burning:	
Pacific Coast Oil Co	1,250.00
Geo. W. Young*	1,175.00

Schedule of proposals for fuel for the naval station, Puget Sound, Washington, under Bureau advertisement dated July 1, 1895; opened July 30, 1895.

Class 1.—Bituminous coal.	
Oregon Improvement Co	$480.00
Blue Cañon Coal Mining Co	480.00
Class 1.—Bituminous coal—Continued.	
F. A. Bell*	$450.00

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated July 11, 1895; opened July 30, 1895.

Class 1.—Lumber:	
Geo. L. Neville	$700.00
Nathan B. Gaskill*	131.25
Duke & Smith	275.00
Class 2.—Lumber:	
Geo. L. Neville	604.00
Nathan B. Gaskill*	101.17
Duke & Smith	211.40
Class 3.—Sand and gravel:	
Geo. L. Neville*	130.40
Class 4.—Cement:	
Geo. L. Neville*	198.00
Jno. O. Gamage	201.60
Class 5.—Bolts, etc.:	
Geo. L. Neville	154.80
James Reilly Repair and Supply Co.	116.97
Ira B. White	155.85
The Manhattan Supply Co	152.15
Class 6.—Brushes:	
Francis Harral	143.01
Geo. L. Neville	216.55
James Reilly Repair and Supply Co.	140.43
Ira B. White*	137.88
F. M. McWilliams	153.60
Class 7.—Hardware:	
Francis Harral*	457.90
Geo. L. Neville	764.49
James Reilly Repair and Supply Co.	466.51
Ira B. White	697.00
The Manhattan Supply Co	839.38
Class 8.—Tools:	
Francis Harral	681.66
Geo. L. Neville	777.60
James Reilly Repair and Supply Co.*	555.55
Ira B. White	763.27
S. C. Forsaith Machine Co	800.46
Class 9.—Metals:	
Geo. L. Neville*	$890.32
James Reilly Repair and Supply Co.	951.77
Ira B. White	958.07
S. C. Forsaith Machine Co	986.29
Class 10.—Diving apparatus.†	
Class 11.—Tools:	
Francis Harral*	1,150.75
Geo. L. Neville	1,836.45
James Reilly Repair and Supply Co.	1,203.28
Ira B. White	1,862.25
S. C. Forsaith Machine Co	1,526.80
Class 12.—Drawing instruments, etc.:	
Hume & Bilisoly	144.30
Francis Harral*	104.01
Geo. L. Neville	173.10
James Reilly Repair and Supply Co.	145.78
Ira B. White	176.50
S. C. Forsaith Machine Co	127.80
Class 13.—Lamps, etc.:	
Geo. L. Neville	486.20
E. Hazard Aikman*	260.45
Ira B. White	292.86
Wm. Porter's Sons	482.13
Porter's Son & Co	265.80
Class 14.—Packing and hose:	
Standard Supply and Equipment Co.	165.55
Francis Harral	151.45
Geo. L. Neville	277.25
James Reilly Repair and Supply Co.	188.50
Ira B. White	209.20
Marc M. Michael	212.50
Mineralized Rubber Co	209.55
Class 15.—Hose:	
Standard Supply and Equipment Co.	558.00
Eureka Fire Hose Co	540.00
Albert Gan	690.00

* Accepted.

† Open purchase.

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 15.—Hose—Continued.	
Geo. L. Neville	$900.00
James Reilly Repair and Supply Co.	435.00
Ira B. White	495.00
Marc M. Michael *	378.00
Mineralized Rubber Co	468.00
S. C. Forsaith Machine Co	474.00
Boston Woven Hose and Rubber Co.	588.00
Class 16.—Pipe and fittings:	
Geo. L. Neville	405.16
James Reilly Repair and Supply Co*	301.98
Ira B. White	363.83
S. C. Forsaith Machine Co	409.07
Class 17.—Files:	
Ira B. White	60.32
Brooklyn Hardware and Sporting Goods Co.*	26.08
Class 18.—Bricks:	
Ira B. White	130.00
Thompson C. Gill & Co.*	118.00
Class 19.—Billiard cloth:	
Geo. L. Neville *	60.00
Ira B. White	145.00
F. M. McWilliams	76.00
The Manhattan Supply Co	83.00
Class 20.—Furniture: †	
Geo. L. Neville	348.00
Ira B. White	236.00
Class 21.—Stoves, etc.:	
Geo. L. Neville	211.00
Chas. S. Connor *	133.00
F. M. McWilliams	347.00
Class 22.—Belting:	
Graton-Knight Manufacturing Co.	(‡)
Geo. L. Neville	392.82
Ira B. White *	372.00
F. M. McWilliams	445.30
Class 22.—Belting—Continued.	
S. C. Forsaith Machine Co	$414.70
National Leather Belting Co	395.60
Class 23.—Lumber:	
Geo. L. Neville	950.00
Chas. S. Connor *	607.70
Duke & Smith	825.00
Class 24.—Lumber:	
Geo. L. Neville	3,275.00
Nathan B. Gaskill *	2,554.00
Class 25.—Lumber:	
Geo. L. Neville	1,000.00
Chas. S. Connor	1,690.10
Nathan B. Gaskill	2,220.00
Duke & Smith *	1,490.00
Class 26.—Lumber:	
Geo. L. Neville *	640.00
Chas. S. Connor	673.75
Class 27.—Lumber:	
Geo. L. Neville	210.00
Chas. S. Connor *	208.50
Nathan B. Gaskill	315.00
Class 28.—Packing, etc.:	
Standard Supply and Equipment Co.	98.75
Geo. L. Neville	155.00
James Reilly Repair and Supply Co.	77.25
Ira B. White *	77.00
Boston Woven Hose and Rubber Co.	101.25
Class 29.—Pipe and fittings:	
Geo. L. Neville	104.46
James Reilly Repair and Supply Co.	110.31
Ira B. White *	94.44
S. C. Forsaith Machine Co	117.66
Class 30.—Oars:	
Geo. L. Neville	165.00
Ira B. White	165.00
F. M. McWilliams *	107.50

Schedule of proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated July 20, 1895; opened August 6, 1895.

Class 1.—Paints:	
F. O. Pierce & Co	$370.00
F. M. McWilliams	498.00
Chas. M. Childs & Co	402.00
John Lucas	397.75
James Langmuir *	361.75
Aquila Rich & Co	390.25
Frank E. Clark	400.00
Chas. H. Pleasants	423.25
Class 2.—White lead:	
Fiske Bros	2,485.00
John Lucas	2,500.00
S. B. Hayden	2,450.00
James Langmuir	2,570.00
Wetherill & Bro	2,570.00
Frank E. Clark *	2,365.00
Smith, Kline & French	2,567.50
R. P. Rowe	2,570.00
Class 3.—Red lead:	
Fiske Bros. *	2,335.00
John Lucas	2,500.00
James Langmuir	2,500.00
Wetherill Bros	2,570.00
Frank E. Clark	2,365.00
Smith, Kline & French	2,567.50
R. P. Rowe	2,570.00
Class 4.—Zinc:	
Taylor Paint and Oil Co	3,899.60
F. O. Pierce & Co	3,782.50
F. M. McWilliams	3,958.50
Chas. M. Childs & Co	4,275.00
John Lucas *	2,952.50
James Langmuir	3,085.00
Aquila Rich & Co	3,368.75
Class 5.—Incandescent lamps:	
Columbia Incandescent Lamp Co.	2,210.00
Ernest A. Desmarets	2,304.00
The Buckeye Electric Co	1,900.00
International Trading and Electric Co	2,298.00
The Universal Electric Co	3,515.60
Bryan Marsh Co	3,476.00
Manhattan Supply Co	2,718.00
Beacon Lamp Co.*	1,695.00
Class 6.—Bunting:	
Walter H. McDaniels *	4,252.40
Class 6.—Bunting—Continued.	
Elliott B. Thurber	$8,934.40
F. M. McWilliams	8,003.20
Class 7.—Tool steel:	
E. J. Brooks & Co	691.50
Marc M. Michael	769.61
Frank H. Woodruff	623.60
Henry S. Manning	574.00
Carpenter Steel Co	1,003.00
Park Bros. & Co.*	516.80
Cumberland Steel and Tin Plate Co.	716.70
Thompson C. Gill & Co	809.00
Class 8.—Iron:	
Frank H. Woodruff *	464.00
Henry S. Manning	548.00
Thompson C. Gill & Co	550.00
Class 9.—Glassware:	
Wm. F. Horflinger *	41.00
James K. Shaw	42.23
Class 10.—Glassware:	
Wm. F. Horflinger *	76.94
James K. Shaw	79.02
Class 11.—Glassware:	
Wm. F. Horflinger *	143.10
James K. Shaw	152.61
Class 12.—China ware:	
Royal Copenhagen Porcelain Co	89.92
Thompson C. Gill & Co	32.88
Class 13.—China ware:	
Royal Copenhagen Porcelain Co	170.98
Thompson C. Gill & Co. *	62.64
Class 14.—China ware:	
James K. Shaw	278.88
Thompson C. Gill & Co. *	137.13
Class 15.—Plated ware:	
R. Wallace & Sons Manufacturing Co	253.23
Wilcox Silver Plate Co. *	250.25
Class 16.—Plated ware:	
R. Wallace & Sons Manufacturing Co	490.52
Wilcox Silver Plate Co. *	484.26
Class 17.—Plated ware:	
R. Wallace & Sons Manufacturing Co. *	921.18
Wilcox Silver Plate Co	962.04

* Accepted. † No award; open purchase. ‡ Informal.

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated July 29, 1895; opened August 13, 1895.

Class 1.—Hardware:	
Ira B. White	$86.85
Standard Supply and Equipment Co	91.00
J. H. Chesley & Co	100.78
James Reilly Repair and Supply Co.	104.06
Class 2.—Soft pig iron:	
S. C. Forsaith Machine Co.*	692.50
J. B. Kendall	697.50
Thompson C. Gill & Co	799.50
Class 3.—Silver, lead, etc.:	
S. C. Forsaith Machine Co	240.70
Thomas J. Lasin	219.00
J. B. Kendall	222.50
Manhattan Supply Co	216.00
Thompson C. Gill & Co	224.70
Wm. J. Coane	195.00
Francis Harral*	175.00
Class 4.—Crucibles:	
Ira B. White	220.00
S. C. Forsaith Machine Co.*	189.00
J. B. Kendall	200.00
Manhattan Supply Co	200.00
Thompson C. Gill & Co	214.00
Fiske Bros	225.00
James Reilly Repair and Supply Co.	250.00
Class 5.—Files:	
F. P. May & Co	613.41
Standard Supply and Equipment Co.	669.91
Manhattan Supply Co	583.47
J. Barton Smith Co	525.31
J. H. Chesley*	509.25
Brooklyn Hardware and Sporting Goods Co	659.02
Class 6.—Belting:	
Geo. L. Neville	218.50
Ira B. White	227.45
Class 6.—Belting—Continued.	
Standard Supply and Equipment Co.	$238.50
Manhattan Supply Co	235.80
Loeb Bros	207.00
Graton & Knight Manufacturing Co.*	192.50
National Leather Belting Co	196.75
James Reilly Repair and Supply Co.	221.50
Class 7.—Tools:	
Ira B. White	96.50
S. C. Forsaith Machine Co	84.40
Manhattan Supply Co	126.35
Francis Harral*	72.12
James Reilly Repair and Supply Co.	92.30
Class 8.—Waste:	
Geo. L. Neville	135.00
Ira B. White	112.50
J. B. Kendall	97.50
Standard Supply and Equipment Co.	103.50
Thompson C. Gill & Co	108.60
Fiske Bros	94.50
J. P. Nawrath	100.95
James Reilly Repair and Supply Co.*	93.00
Class 9.—Glass:	
Geo. L. Neville	94.50
Chas. Becker*	72.09
Standard Supply and Equipment Co.	80.19
Manhattan Supply Co	86.40
James Reilly Repair and Supply Co.	72.36
Class 10.—Lumber:	
Geo. L. Neville	836.52
Nathan B. Gaskill	818.79
W. P. Galliher & Bro.*	734.10
Wm. D. Gill & Son	834.95

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated July 26, 1895; opened August 13, 1895.

Class 1.—Screws:	
Francis Harral	$107.93
Ira B. White	102.65
S. C. Forsaith Machine Co	131.85
Geo. L. Neville*	98.25
Manhattan Supply Co	106.55
John H. Tissot Sons	102.00
Standard Supply and Equipment Co.	106.90
J. H. Chesley & Co	110.06
A. P. Swoyer & Co	106.05
Brooklyn Hardware and Sporting Goods Co	98.50
James Reilly Repair and Supply Co.	108.79
Class 2.—Hand lamps:	
Ira B. White	59.76
Geo. L. Neville	47.40
Manhattan Supply Co	39.60
Wm. Porter's Sons	56.28
E. Hazard Aikman	54.00
Class 3.—Leather:	
Francis Harral*	153.20
B. Frank & Sons	207.90
Geo. Oberne	252.00
Ira B. White	241.10
Geo. L. Neville	247.50
Manhattan Supply Co	313.00
Standard Supply and Equipment Co.	262.80
Class 4.—Metals:	
S. C. Forsaith Machine Co	2,366.00
J. B Kendall	2,241.00
Geo. L. Neville	2,300.00
Class 5.—Packing:	
Ira B. White	308.01
Geo. L. Neville*	252.00
Manhattan Supply Co	298.82
Standard Supply and Equipment Co.	276.57
Albert Gau	630.00
James Reilly Repair and Supply Co.	302.40
Class 6.—Pipe and fittings:	
Ira B. White	685.81
S. C. Forsaith	568.08
Geo. L. Neville	651.18
Manhattan Supply Co	584.34
A. P. Swoyer & Co.*	575.16
James Reilly Repair and Supply Co.	772.15
Class 7.—Files:	
Ira B. White	$154.80
Geo. L. Neville	201.47
Manhattan Supply Co	153.49
J. Barton Smith Co.*	139.25
Standard Supply and Equipment Co	185.29
J. H. Chesley & Co	140.93
Brooklyn Hardware and Sporting Goods Co	151.15
Class 8.—Tools:	
Francis Harral*	330.46
Ira B. White	368.10
Geo. L. Neville	420.41
Manhattan Supply Co	340.10
John H. Tissot, jr	373.06
Standard Supply Co	432.66
James Reilly Repair and Supply Co.	343.80
Class 9.—Sponge:	
Geo. L. Neville	125.00
Thompson C. Gill & Co	99.50
Manhattan Supply Co.*	40.00
Hume & Bilisoly	74.50
Peter Van Schaack & Sons	93.50
Brooklyn Hardware and Sporting Goods Co	40.00
Class 10.—Oyster shells:	
H. E. Culpepper, jr	700.00
Geo. L. Neville	690.00
Thompson C. Gill & Co	848.00
Samuel P. Oast*	650.00
The Nottingham & Wrenn Co	800.00
Class 11.—Pipe and fittings:	
Ira B. White*	356.54
Geo. L. Neville	398.55
Manhattan Supply Co	358.10
Class 12.—Broken stone, etc.:	
Geo. L. Neville	108.00
Thompson C. Gill & Co	119.00
Samuel P. Oast*	90.00
Class 13.—Water-closet, range, etc.:	
Ira B. White	290.05
Geo. L. Neville*	259.25

* Accepted.

Schedule of proposals for supplies for the Mare Island Navy-Yard, under Bureau advertisement dated July 13, 1895; opened August 13, 1895.

Class 1.—Candles:	
S. C. Forsaith Machine Co	$1,254.00
Warner Ells	1,200.00
Samuel J. Wormser *	1,150.00
Class 2.—Furniture. †	
Class 3.—Bolts and nuts:	
Chas. E. Miller *	53.60
Thompson C. Gill & Co	79.00
Class 4.—Hardware:	
Chas. E. Miller ‡	170.35
Class 5.—Lumber. †	
Class 6.—Tools:	
Francis Harral *	125.40
Class 6.—Tools—Continued.	
S. C. Forsaith Machine Co	$132.74
Chas. E. Miller	135.94
Class 7.—Gaskets:	
New York Belting and Packing Co.*	163.26
Bowers Rubber Co	169.44
Boston Woven Hose and Rubber Co.	229.45
Chas. E. Miller	277.10
Class 8.—Tools:	
Francis Harral *	157.30
Dunham, Carrigan & Hayden Co	166.43
Chas. E. Miller	166.93

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated August 8, 1895; opened August 27, 1895.

Class 1.—Lumber:	
Nathan B. Gaskill	$904.00
Thos. W. Smith *	747.00
Class 2.—Slate:	
S. C. Forsaith Machine Co	391.40
Albert D. Cook	536.00
J. B. Kendall	382.18
F. M. McWilliams	402.66
Class 2.—Slate—Continued.	
Thompson C. Gill & Co. *	$298.47
Clark Bros. Lime and Cement Co	410.00
J. T. Walker & Sons	(‖)
Class 3.—Gravel:	
James Symington	2,340.00
E. C. Gatchel	630.00
Clark Bros. Lime and Cement Co.*	550.00

Schedule of proposals for supplies for the navy-yard, League Island, Pennsylvania, under Bureau advertisement dated August 10, 1895; opened August 27, 1895.

Class 1.—Brass chain:	
Chas. J. Field *	$22.00
Class 2.—Tool chests:	
General Equipment and Engineering Co *	100.56
Manhattan Supply Co	115.20
Chas. J. Field	120.00
Jas. Reilly Repair and Supply Co	104.00
Class 3.—Pulley blocks:	
General Equipment and Engineering Co *	9.44
Francis Harral	18.40
S. C. Forsaith Machine Co	17.60
Chas. J. Field	11.92
Jas. Reilly Repair and Supply Co	12.00
Class 4.—Bolts:	
J. H. Sternberg	105.36
General Equipment and Engineering Co *	51.16
Chas. J. Field	93.00
Class 5.—Hardware:	
General Equipment and Engineering Co *	287.94
Class 5.—Hardware—Continued.	
Manhattan Supply Co	$311.50
Chas. J. Field *	237.22
Class 6.—Tools:	
Manhattan Supply Co	279.60
Francis Harral	281.64
Chas. J. Field *	242.12
Jas. Reilly Repair and Supply Co	289.40
Class 7.—Tobin bronze:	
General Equipment and Engineering Co	45.00
Ansonia Brass and Copper Co *	43.20
Class 8.—Gauge glasses:	
General Equipment and Engineering Co *	56.36
Charles J. Field	66.04
Jas. Reilly Repair and Supply Co	59.88
Class 9.—Pipe fittings:	
Manhattan Supply Co *	77.60
Class 10.—Tube stoppers:	
Manhattan Supply Co *	404.70
Chas. J. Field	1,260.00

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated August 9, 1895; opened August 27, 1895.

Class 1.—Corn brooms:	
Bolles & Wilde	$96.75
Manhattan Supply Co	180.60
John A. Driscoll *	74.39
F. M. McWilliams	99.76
S. C. Forsaith Machine Co	104.06
John Mullett & Co	107.50
General Equipment and Engineering Co	85.57
Jas. Reilly Repair and Supply Co	84.71
Class 2.—Pine wood:	
John Mullett & Co *	168.75
Class 3.—Hardware:	
Bolles & Wilde *	86.72
Manhattan Supply Co	92.66
Class 4.—Burlaps, etc.: †	
Manhattan Supply Co	287.00
F. M. McWilliams	311.25
Class 5.—Beeswax:	
Manhattan Supply Co	69.94
F. M. McWilliams	78.00
Fiske Bros	70.00
S. C. Forsaith Machine Co *	66.00
General Equipment and Engineering Co	68.00
Class 6.—Sheet rubber:	
Bolles & Wilde	$37.50
Manhattan Supply Co	59.10
Thompson C. Gill & Co	42.00
F. M. McWilliams	42.00
Francis Harral *	28.50
Charles A. Jenkins	33.00
General Equipment and Engineering Co	30.00
Revere Rubber Co	36.00
Jas. Reilly Repair and Supply Co	120.00
Class 7.—Leather belting:	
Bolles & Wilde *	80.00
Manhattan Supply Co	103.80
Class 8.—Files:	
Bolles & Wilde	22.42
Francis Harral	22.18
Chas. A. Jenkins	27.06
General Equipment and Engineering Co	28.03
Jas. Reilly Repair and Supply Co *	21.87
Class 9.—Lumber:	
S. C. Forsaith Machine Co	152.90
E. B. James & Co *	142.40
J. O. Wetherbee	158.10

* Accepted. † Open purchase. ‡ Bid excessive; open purchase. ‖ Informal.

Schedule of proposals for supplies for the navy-yard, Boston, Mass., etc.—Continued.

Class 10.—Valves:	
Manhattan Supply Co	$24.68
S. C. Forsaith Machine Co	25.96
General Equipment and Engineering Co.*	20.78
James Reilly Repair and Supply Co.	49.92
Class 11.—Pig iron:	
Thompson C. Gill & Co	330.00
S. C. Forsaith Machine Co.*	299.00
Class 12.—Molder's sand, etc.†	
Class 13.—Sea-coal facing, etc.:	
General Equipment and Engineering Co.*	$62.81
Class 14.—Tools:	
Bolles & Wilde	48.10
Manhattan Supply Co	121.50
Francis Harral*	36.68
S. C. Forsaith Machine Co	64.46
James Reilly Repair and Supply Co.	53.77

Schedule of proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated July 25, 1895; opened August 27, 1895.

Class 1.—Nuts, etc.:	
Holbrook, Merrill & Stetson*	$159.00
Thompson C. Gill & Co	195.06
Chas. E. Miller	238.35
Class 2.—Brushes, etc.:	
Arms & Dallam	350.15
Nelms & Co	311.20
Louis E. Lake	457.30
Francis Harral*	303.03
R. W. Simpson	384.96
W. P. Fuller & Co	338.35
Class 3.—Fire clay:	
J. H. Powell	142.00
Manhattan Supply Co.*	138.00
Louis E. Lake	247.50
Charles E. Miller	151.20
A. S. Carman	(‡)
Class 4.—Glass:	
Charles E. Miller	30.60
W. P. Fuller & Co.*	27.80
Class 5.—Hardware:	
Charles E. Miller	§363.80
Dunham, Carrigan & Hayden Co	382.10
Class 6.—Leather:	
Louis E. Lake	112.50
Charles E. Miller*	80.62
Dunham, Carrigan & Hayden Co	100.00
Class 7.—Lumber:	
J. H. Powell	1,512.74
William Walker	1,406.00
W. H. Leahy*	1,404.00
A. S. Carman	1,473.00
Class 8.—Ash:	
J. H. Powell	200.00
William Walker*	170.00
W. H. Leahy	200.00
A. S. Carman	199.00
Class 9.—Steel:	
Manhattan Supply Co	398.00
Thompson C. Gill & Co.*	295.00
Chas. E. Miller	647.00
Park Bro. & Co., limited	470.60
Dunham, Carrigan & Hayden Co	579.20
Class 10.—Paints:	
Charles M. Childs & Co	$265.00
W. P. Fuller & Co.*	151.25
Charles M. Yates	188.50
Class 11.—Polishing paste:	
Manhattan Supply Co	99.50
Holbrook, Merrill & Stetson	115.00
Louis E. Lake	135.00
Fiske Bros.*	77.50
W. P. Fuller & Co	100.00
Chas. M. Yates	140.00
Class 12.—Alcohol:	
Louis E. Lake	867.00
W. P. Fuller & Co.*	771.00
Class 13.—Shellac:	
Fiske Bros	420.00
Chas. M. Childs & Co	475.00
W. P. Fuller & Co.*	380.00
Chas. M. Yates	450.00
Class 14.—Turpentine:	
W. P. Fuller*	215.00
Chas. M. Yates	235.00
Class 15.—Grease:	
Fiske Bros	117.50
Manhattan Supply Co	180.00
W. P. Fuller & Co	115.00
Swan & Finch*	95.00
Chas. M. Yates	120.00
Class 16.—Varnish:	
Chas. M. Yates*	33.00
Class 17.—Pipe and fittings:	
Holbrook, Merrill & Stetson	897.95
Henry D. Morton*	854.38
Chas. E. Miller	1,044.91
Dunham, Carrigan & Hayden Co	1,839.64
Class 18.—Brass pipe:	
Holbrook, Merrill & Stetson*	517.30
Henry D. Morton	611.30
Chas. E. Miller	694.22
Dunham, Carrigan & Hayden Co	560.76
Class 19.—Tools:	
Francis Harral	548.50
Chas. E. Miller	751.65
Dunham, Carrigan & Hayden Co	608.77
Class 20.—Soap, etc.	

Proposals for stationery for the Washington Navy-Yard under Bureau advertisement dated August 15, 1895; opened August 31, 1895.

Class 1:	
Arthur, Mountain & Co.*	$424.00
Hume & Bilisoly	534.50
Manhattan Supply Co	490.30
D. A. Patten	474.70
Class 2:	
Arthur, Mountain & Co.*	175.38
Hume & Bilisoly	252.14
Manhattan Supply Co	205.89
D. A. Patten	307.15
Class 3:	
Arthur, Mountain & Co	381.99
Easton & Rupp	373.70
Hume & Bilisoly	387.40
R. Carter Ballantyne*	369.60
Manhattan Supply Co	376.00
D. A. Patten	437.10
Class 4:	
Arthur, Mountain & Co	219.16
Easton & Rupp	263.50
Class 4—Continued.	
Hume & Bilisoly	$228.54
R. Carter Ballantyne	243.80
Manhattan Supply Co.*	206.90
D. A. Patten	308.21
Class 5:	
Arthur, Mountain & Co	131.53
Easton & Rupp	127.77
Hume & Bilisoly*	124.91
R. Carter Ballantyne	125.22
Manhattan Supply Co	125.60
D. A. Patten	151.84
Class 6:	
Arthur, Mountain & Co	148.19
Easton & Rupp*	127.84
Hume & Bilisoly	138.00
R. Carter Ballantyne	134.71
Manhattan Supply Co	134.44
D. A. Patten	140.37

* Accepted. † Open purchase. ‡ Informal. § Award made for $175.80.

Proposals for stationery for the Washington Navy-Yard, etc.—Continued.

Class 7:	
Easton & Rupp*	$74.88
Hume & Bilisoly	81.76
R. Carter Ballantyne	87.42
Manhattan Supply Co	82.30
D. A. Patten	(†)
Class 8:	
Easton & Rupp	$293.46
Hume & Bilisoly	324.08
R. Carter Ballantyne	324.15
Manhattan Supply Co.*	267.22
D. A. Patten	(†)

Proposals for stationery for the New York Navy-Yard under Bureau advertisement dated August 16, 1895; opened August 31, 1895.

Class 1:	
Arthur, Mountain & Co.*	$1,722.70
Hume & Bilisoly	2,108.95
James B. Wilson	1,869.55
Manhattan Supply Co	1,960.55
D. A. Patten	1,915.65
Class 2:	
Arthur, Mountain & Co*	661.54
Hume & Bilisoly	911.87
James B. Wilson	1,169.43
Manhattan Supply Co	740.36
D. A. Patten	1,172.00
Class 3:	
Arthur, Mountain & Co	689.36
R. Carter Ballantyne	713.95
Hume & Bilisoly	709.50
James B. Wilson	753.60
Manhattan Supply Co.*	659.75
D. A. Patten	796.35
Class 4:	
Arthur, Mountain & Co	644.04
R. Carter Ballantyne	762.00
Hume & Bilisoly	653.83
Manhattan Supply Co.*	669.10
D. A. Patten	865.55
Class 5:	
Arthur, Mountain & Co	259.68
R. Carter Ballantyne *	243.36
Hume & Bilisoly	247.73
Class 5—Continued:	
James B. Wilson	$249.78
Manhattan Supply Co	246.66
D. A. Patten	275.84
Class 6:	
Arthur, Mountain & Co	578.60
R. Carter Ballantyne*	535.72
Hume & Bilisoly	556.97
James B. Wilson	549.36
Manhattan Supply Co	546.58
D. A. Patten	545.08
Class 7:	
R. Carter Ballantyne	239.72
Hume & Bilisoly*	214.76
James B. Wilson	236.36
Manhattan Supply Co	220.97
D. A. Patten	(†)
Class 8:	
R. Carter Ballantyne	33.25
Hume & Bilisoly	32.71
James B. Wilson*	24.42
Manhattan Supply Co	24.76
D. A. Patten	29.36
Class 9:	
R. Carter Ballantyne	822.30
Hume & Bilisoly	788.33
James B. Wilson	717.15
Manhattan Supply Co.*	699.30
D. A. Patten	(†)

Schedule of proposals for stationery for the navy-yard, Mare Island, Cal., under Bureau advertisement dated August 17, 1895; opened September 10, 1895.

Class 1:	
Cunningham, Curtiss & Welch	$452.00
J. P. Le Count	454.00
Arthur, Mountain & Co.*	287.10
Payot, Upham & Co	361.50
Class 2:	
Cunningham, Curtiss & Welch	192.50
J. P. Le Count	286.79
Arthur, Mountain & Co.*	150.64
Payot, Upham & Co	183.40
Class 3:	
Cunningham, Curtiss & Welch	127.00
J. P. Le Count	124.75
Arthur, Mountain & Co.*	120.60
Manhattan Supply Co	143.00
Payot, Upham & Co	120.95
Class 4:	
Cunningham, Curtiss & Welch	300.00
J. P. Le Count	433.00
Manhattan Supply Co.*	216.90
Payot, Upham & Co	258.26
Class 5:	
Cunningham, Curtiss & Welch	$73.62
J. P. Le Count	72.42
Arthur, Mountain & Co	91.38
Manhattan Supply Co	84.90
Payot, Upham & Co.*	69.84
Class 6:	
Cunningham, Curtiss & Welch	63.25
J. P. Le Count	65.20
Manhattan Supply Co.*	49.08
Thompson C. Gill & Co	98.70
Payot, Upham & Co	50.84
Class 7:	
Cunningham, Curtiss & Welch	71.10
J. P. Le Count	63.10
Manhattan Supply Co	81.28
Payot, Upham & Co.*	51.14
Class 8:	
Cunningham, Curtiss & Welch	285.42
J. P. Le Count	274.11
Manhattan Supply Co.*	259.25
Payot, Upham & Co	276.61

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated August 24, 1895; opened September 10, 1895.

Class 1.—Paving sand:	
A. H. Lindsay, jr	$177.00
Samuel P. Oast*	156.00
George L. Neville	165.00
Class 2.—Rivets:	
General Equipment and Engineering Co	398.33
H. M. Sternberg*	292.17
George L. Neville	973.90
Class 3.—Steel plates:	
Carbon Steel Co	6,949.82
Frank H. Woodruff	5,413.55
George L. Neville	5,852.48
Carnegie Steel Co.*	3,657.80
Class 4.—Steel shapes:	
General Equipment and Engineering Co	1,093.67
Frank H. Woodruff	1,901.80
N. B. Handy & Co.*	1,072.50
George L. Neville	2,107.20
Carnegie Steel Co	1,200.48
Class 5.—Rivets:	
General Equipment and Engineering Co.*	187.84
H. M. Sternberg	211.59
George L. Neville	275.22

* Accepted.

† Informal.

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 6.—Steel furnaces:
- Frank H. Woodruff* $1,040.00
- George L. Neville 1,042.00

Class 7.—Mild steel (sheets):
- Frank H. Woodruff 1,426.53
- George L. Neville* ..... †1,040.31
- Carnegie Steel Co ..... †1,040.31

Class 8.—Mild steel bars:
- Frank H. Woodruff* $153.63
- George L. Neville 190.93

Class 9.—Boiler tubes:
- Richard Pancoast ..... (‡)
- George L. Neville* 577.72

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated August 22, 1895; opened September 10, 1895.

Class 1.—White pine:
- Chas. E. Pell $1,996.00
- American Lumber Co 2,170.00
- Watson & Pittinger* 1,795.00

Class 2.—Norway pine:
- Chas. E. Pell* 280.00
- Watson & Pittinger 346.00

Class 3.—White oak:
- Chas. E. Pell 784.00
- Watson & Pittinger* 664.00

Class 4.—White ash:
- Chas. E. Pell 348.00
- Watson & Pittinger* 328.50
- Geo. L. Neville 450.00

Class 5.—White cedar:
- Chas. E. Pell 650.00
- Watson & Pittinger 615.00
- C. F. Hodsdon Co.* 595.00
- Geo. L. Neville 1,250.00

Class 6.—Paints:
- Jno. Lucas & Co 639.00
- Weil & Messner 651.00
- James Langmuir* 623.88
- Chas. H. Pleasants§ 261.40
- Chas. M. Childs & Co 670.25
- General Equipment and Engineering Co 635.25

Class 7.—Polishing paste:
- Fiske Bros 427.20
- James Langmuir 495.00
- Manhattan Supply Co 432.00
- Chas. H. Pleasants 457.50
- General Equipment and Engineering Co.* 405.00

Class 8.—Brown zinc:
- Jno. Lucas & Co 275.00
- James Langmuir* 224.50
- Chas. H. Pleasants 310.00
- Chas. M. Childs & Co 230.00
- Taylor Paint and Oil Co 249.00
- General Equipment and Engineering Co 256.25

Class 9.—Alcohol:
- The American Distributing Co.* ... 2,450.00

Class 10.—Varnish:
- Jno. Lucas & Co 246.00
- Union Supply Co 240.00
- Excelsior Varnish Works* 234.00
- James Langmuir 248.00
- United States Varnish Co 550.00
- Chas. H. Pleasants 348.00
- Chas. M. Childs & Co 200.00
- Taylor Paint and Oil Co 310.00
- General Equipment and Engineering Co 369.00
- Lawson Valentine & Co 590.00

Class 11.—Shellac:
- Fiske Bros 1,267.20
- James Langmuir 1,267.50
- George L. Neville 1,430.00
- Chas. M. Childs & Co 1,265.00
- General Equipment and Engineering Co.* 1,209.50
- Jas. Reilly Repair and Supply Co.. 1,267.00

Class 12.—Lubricating grease:
- Fiske Bros 462.00
- New York Lubricating Oil Co 500.00
- Blivin & Carrington 525.00
- Swan & Finch Co.* 375.00
- Francis Harral 494.50
- Manhattan Supply Co 475.00
- General Equipment and Engineering Co 475.00

Class 13.—Lard oil:
- Fiske Bros* $10,568.00
- New York Lubricating Oil Co 13,000.00
- Manhattan Oil Co 11,696.00

Class 14.—Tools:
- Ericsson & Hall‡ 313.15
- Manhattan Supply Co 386.20

Class 15.—Cotton waste:
- Fiske Bros 1,331.00
- Henry S. Manning 1,433.00
- Oliver H. Bixley 1,490.00
- J. P. Naweath 1,500.00
- Cavanagh & Bros 1,352.00
- Ericsson & Hall 1,359.80
- Francis Harral 1,525.00
- Manhattan Supply Co 1,348.00
- Chas. H. Pleasants 1,830.00
- General Equipment and Engineering Co 1,401.88
- Jas. Reilly Repair and Supply Co.*. 1,312.00

Class 16.—White lead:
- Frank E. Clark* 2,415.00
- Jno. Lucas & Co 2,490.00
- S. B. Hayden 2,575.00
- Fiske Bros 2,620.00
- Wetherill & Bro 2,695.00
- R. P. Rowe 2,800.00
- James Langmuir 2,775.00
- Geo. L. Neville 2,620.00
- General Equipment and Engineering Co 2,600.00

Class 17.—Enameled cloth:
- Louis Manne & Co 1,215.00
- J. P. Nawrath 1,068.50
- Cavanagh Bros 1,010.00
- Union Supply Co 987.50
- Francis Harral 1,080.00
- Geo. L. Neville 1,325.00
- Manhattan Supply Co 959.50
- Louis Wechsler 1,016.50
- Jno. H. Tissot, jr.* 940.00

Class 18.—Burlaps:
- Louis Manne & Co 306.00
- Cavanagh Bros 287.00
- H. K. Davis 287.00
- Union Supply Co 287.77
- Jaffre & Pinkus* 271.25
- Francis Harral 363.30
- Geo. L. Neville 349.30
- Manhattan Supply Co 319.90
- Louis Wechsler 288.75
- General Equipment and Engineering Co 420.00

Class 19.—10,000 pairs calfskin shoes:
- Geo. F. Roedel* 13,250.00
- Watsontown Boot and Shoe Co 15,100.00
- Cavanagh Bros 16,490.00

Class 20.—10,000 watch caps:
- H. K. Davis 3,575.00
- Sam'l Barron 3,137.50
- Thos. G. Hood* 2,970.00
- Wm. H. Horstmann Co 3,200.00

Class 21.—10,000 black silk cravats:
- J. P. Nawrath* 3,800.00
- Manhattan Supply Co 3,990.00

Class 22.—Knife lanyards:
- Manhattan Supply Co 2,160.00
- Wm. H. Horstmann Co.* 1,612.50

Class 23.—10,000 spools linen thread (black):
- Louis Manne & Co 606.25
- J. P. Nawrath 580.00
- Union Supply Co 616.66

* Accepted. † Tie bid. ‡ Informal. § Rejected.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 23.—10,000 spools linen thread (black)—Continued.	
Manhattan Supply Co.*	$560.00
Wm. H. Horstmann Co	575.00
Louis Wechsler	625.00
Jno. H. Tissot, jr	582.00
Class 24.—10,000 spools spool cotton:	
Louis Manne & Co	335.50
J. P. Nawrath	300.00
Union Supply Co	281.25
Manhattan Supply Co.*	273.00
Louis Wechsler	325.00
Jno. H. Tissot, jr	312.50
Class 25.—10,000 dozen eagle buttons:	
Thos. G. Hood*	688.00
Manhattan Supply Co	2,300.00
Wm. H. Horstmann Co	2,250.00
Louis Wechsler	718.75
Class 26.—5,000 dozen ivory buttons (small):	
Union Supply Co	183.33
Thos. G. Hood*	178.50
Manhattan Supply Co	190.00
Louis Wechsler	180.00
Class 27.—5,000 dozen rubber buttons (small):	
India Rubber Comb Co.*	168.75
J. P. Nawrath	187.50
Union Supply Co	183.33
Thos. G. Hood	175.50
Manhattan Supply Co	180.00
Louis Wechsler	187.50
Class 28.—5,000 coarse combs:	
India Rubber Comb Co.*	158.33
Manhattan Supply Co	220.00
Jno. H. Tissot, jr	220.00
Class 29.—25,000 boxes blacking:	
Cavanagh Bros	677.08
Francis Harral	710.00
Manhattan Supply Co.*	644.50
Class 29.—25,000 boxes blacking—Cont'd.	
General Equipment and Engineering Co	$859.37
Jas. Reilly Repair and Supply Co	687.50
Class 30.—One 16-inch engine lathe:	
Lodge & Davis Machine Tool Co.*	491.30
Manhattan Supply Co	779.90
Class 31.—One 21-inch engine lathe:	
Lodge & Davis Machine Tool Co*	702.05
Manhattan Supply Co	987.90
Class 32.—One 27-inch engine lathe:	
Lodge & Davis Machine Tool Co.*	924.30
Manhattan Supply Co	1,573.00
Class 33.—Electrical supplies:	
Elson & Brewster Engineering Co.*	1,081.50
Western Electric Co	1,313.25
Class 34.—Electrical supplies:	
Elson & Brewster Engineering Co	933.40
Western Electric Co.*	292.78
Class 35.—Electrical supplies:	
Western Electric Co.*	4,680.80
Class 36.—Electrical supplies:	
Western Electric Co.*	5,159.85
Page Bros. & Co	6,096.50
Class 37.—Electrical supplies:	
Elson & Brewster Engineering Co.*	244.00
Class 38.—Electrical supplies:	
Western Electric Co.*	380.00
Class 39.—Electrical supplies:	
Elson & Brewster Engineering Co.	2,314.80
Western Electric Co.*	1,668.00
J. A. Machado	1,750.20
Manhattan Supply Co	2,698.80
Class 40.—Electrical supplies:	
Western Electric Co.*	1,538.75
Class 41.—Electrical supplies.†	
Class 42.—Electrical supplies:	
Elson & Brewster Engineering Co.	312.00
Western Electric Co	195.00
W. H. Fleming*	193.80

Schedule of proposals for supplies for the naval station, Key West, Fla., under Bureau advertisement dated September 4, 1895; opened September 24, 1895.

Class 1.—Lumber:	
John Lowe, jr	$3,405.00
Geo. L. Neville	3,642.00
Class 1.—Lumber—Continued.	
Wm. H. Williams*	$2,194.20

Schedule of proposals for the navy-yard, Mare Island, Cal., under Bureau advertisement dated August 31, 1895; opened September 24, 1895.

Class 1.—Dredging:	
San Francisco Bridge Co	$12,600.00
John Hackett	11,250.00
Allexey W. Von Schmidt*	6,900.00
Class 2.—Cement:	
A. S. Carman*	192.92
Class 3.—Sand, etc.:	
A. S. Carman*	90.75
Class 4.—Brick:	
A. S. Carman*	$95.60
Class 5.—Lumber:	
W. H. Leahy	104.81
A. S. Carman*	75.36
Class 6.—Lumber:	
W. H. Leahy	11,849.00
A. S. Carman*	11,552.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated September 6, 1895; opened September 24, 1895.

Class 1.—Steel rails, etc.:	
J. B. Kendall	$1,155.04
Thompson C. Gill & Co	1,163.08
Carnegie Steel Co., Ltd.*	1,141.18
Class 2.—White oak:	
D. C. Alexander	110.00
W. T. Galliher & Bro	107.50
L. A. Clarke*	99.50
Nathan B. Gaskill	172.50
Geo. L. Neville	220.00
General Equipment and Engineering Co	200.00
Thos. W. Smith	115.00
Class 3.—Packing:	
Francis Harral	$92.50
J. B. Kendall	89.30
Barber & Ross*	73.10
James Reilly Repair and Supply Co.	82.40
Standard Supply and Equipment Co	482.80
Thompson C. Gill & Co	77.90
George L. Neville	87.00
General Equipment and Engineering Co	84.55
Ira B. White	76.40
Henry J. M. Howard	94.80
Manhattan Supply Co	341.90

* Accepted.

† Open purchase; no bids received.

Schedule of proposals for supplies for the navy-yard, Washington D. C., etc.—Continued.

Class 4.—Pipe, etc.:	
S. C. Forsaith Machine Co	$494.86
Barber & Ross	495.15
James Reilly Repair and Supply Co.	538.24
Thompson C. Gill & Co	1,945.73
George L. Neville	454.29
A. P. Swoyer & Co	473.87
General Equipment and Engineering Co.*	438.89
Ira B. White	477.83
E. G. Shafer & Co	473.35
Class 4.—Pipe, etc —Continued.	
Manhattan Supply Co	$544.85
Class 5.—Tools:	
Francis Harral	20.85
S. C. Forsaith Machine Co	31.50
Jas. Reilly Repair and Supply Co.*	18.85
Standard Supply and Equipment Co	19.72
General Equipment and Engineering Co	29.96
Ira B. White	20.55

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated September 5, 1895; opened September 24, 1895.

Class 1.—Brushes:	
Jas. Reilly Repair and Supply Co.*	$203.40
Geo. L. Neville	230.00
Jno. H. Tissot, jr	254.40
Francis Harral	275.60
Royal Lowrey	224.60
Ira B. White	261.60
Manhattan Supply Co	403.60
Class 2.—Hardware:	
Thompson C. Gill & Co	362.90
James Reilly Repair and Supply Co.	321.60
Geo. L. Neville	317.52
Standard Supply and Equipment Co	306.10
Jno. H. Tissot, jr	356.96
Francis Harral	337.70
Royal Lowrey	496.06
General Equipment and Engineering Co.*	290.34
Ira B. White	306.66
Manhattan Supply Co	335.52
Bradford, Kennedy Sons & McGuire	317.00
Class 3.—Padlocks:	
George L. Neville	293.76
General Equipment and Engineering Co	131.76
Ira B. White*	113.88
Duke & Smith	168.84
Brooklyn Hardware and Sporting Goods Co	120.16
Class 4.—Belting:	
Jas. Reilly Repair and Supply Co	258.50
George L. Neville	321.00
Standard Supply and Equipment Co	265.38
Chas. S. Connor	317.35
National Leather Belting Co.*	200.00
Royal Lowrey	284.90
General Equipment and Engineering Co	269.00
Ira B. White	275.00
Graton & Knight Manufacturing Co	221.25
George O'Berne & Co	266.40
Loeb Bros	240.61
Manhattan Supply Co	296.25
Class 4.—Belting—Continued.	
Page Belting Co	$222.00
Bradford, Kennedy Sons & McGuire	290.00
Class 5.—Bar iron:	
Thompson C. Gill & Co	190.00
Jas. Reilly Repair and Supply Co	275.00
J. B. Kendall	184.00
Geo. L. Neville*	179.00
Standard Supply and Equipment Co	181.60
Royal Lowrey	275.00
A. P. Swoyer & Co	244.00
General Equipment and Engineering Co	179.30
Ira B. White	207.00
Class 6.—Emery cloth, etc.:	
Thompson C. Gill & Co	387.95
Jas. Reilly Repair and Supply Co.*	280.00
S. C. Forsaith Machine Co	340.65
J. B. Kendall	336.50
Geo. L. Neville	316.00
Standard Supply and Equipment Co	322.25
Jno. H. Tissot, jr	302.00
Royal Lowrey	412.00
A. P. Swoyer & Co	351.40
General Equipment and Engineering Co	310.35
Ira B. White	300.75
Manhattan Supply Co	328.00
Bradford, Kennedy Sons & McGuire	297.00
Class 7.—Soap, etc.:	
George L. Neville	130.50
John H. Tissot, jr	174.50
General Equipment and Engineering Co.*	117.90
Class 8.—Yellow pine:	
Nathan B. Gaskill	2,065.00
George L. Neville	1,880.00
Philip Walsh & Sons	1,965.50
Duke & Smith*	1,862.80
Class 9.—White pine:	
Nathan B. Gaskill	1,825.00
Geo. L. Neville	1,625.00
Philip Walsh & Sons*	1,501.25
Thomas W. Smith	1,580.00

Schedule of proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated September 7, 1895; opened October 1, 1895.

Class 1.—Bolts:	
Charles E. Miller	$266.20
Geo. L. Payne*	206.28
Thompson C. Gill & Co	252.65
Class 2.—Cement:	
Wm. Wolff & Co	(†)
Wm. Walker	720.00
J. H. Powell	740.00
A. S. Carman*	686.00
Class 3.—Sand:	
S. B. McNear	180.00
Wm. Walker	180.00
Class 3.—Sand—Continued.	
J. H. Powell	$175.50
A. S. Carman*	169.50
Class 4.—Spikes:	
Charles E. Miller	29.40
George L. Payne*	24.00
Thompson C. Gill & Co	29.93
Class 5.—Lumber:	
Wm. Walker	913.00
J. H. Powell	1,145.50
A. S. Carman*	899.19
W. H. Leahy	1,015.80

* Accepted.

† Informal.

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated September 14, 1895; opened October 1, 1895.

Class 1.—50,000 pounds corned beef:	
Sidney Thursby	$4,225.00
Chas. F. Sullivan	4,425.00
Joseph C. Cooper*	3,541.66
D. E. Boulton	4,375.00
Class 2.—50,000 pounds tinned hams:	
Sidney Thursby*	4,725.00
Chas. F. Sullivan	7,800.00
D. E. Boulton	6,335.00
Class 3.—40,000 pounds roast beef:	
Sidney Thursby	3,380.00
Chas. F. Sullivan	3,440.00
Joseph C. Cooper	2,800.00
D. E. Boulton	2,916.00
C. J. Caughey*	2,750.00
Class 4.—50,000 pounds tinned mutton:	
Sidney Thursby	4,215.00
Joseph C. Cooper*	3,083.34
Class 5.—Roofing tin:	
Joseph A. McKee	$670.50
Thompson C. Gill & Co.*	404.10
Manhattan Supply Co	627.30
S. C. Forsaith Machine Co	675.00
Merchant & Co	607.50
Frank H. Woodruff	688.50
Class 6.—Window frames and sash:	
Manhattan Supply Co	397.00
James H. Pittinger*	337.50
Class 7.—Steel roof trusses:	
Milliken Brothers	2,656.60
James Symington*	2,331.60
Youngstown Bridge Co	2,405.00
Manhattan Supply Co	2,715.80
Frank H. Woodruff	2,719.50

Schedule of proposals for supplies for the naval station, Port Royal, S. C., under Bureau advertisement dated September 19, 1895; opened October 8, 1895.

Class 1.—Lumber:	
Eppinger & Russell Co	$921.27
Campbell & Sherer*	737.01
Geo. L. Neville	1,529.52
A. S. Bacon & Sons	890.56
Class 2.—Drift bolts:	
Chamblin, Dulany & Scott	976.99
Chas. A. Moore	867.32
J. B. Kendall	864.51
Manhattan Supply Co	799.31
Cameron & Barkly Co.*	789.98
J. H. Sternbergh	913.71
Thompson C. Gill & Co	874.08
George L. Neville	922.95
C. C. Townsend	1,018.99
Class 3.—Iron straps:†	
Chamblin, Dulany & Scott	$375.87
Chas. A. Moore	259.00
J. B. Kendall	266.52
Cameron & Barkly Co	307.53
Thompson C. Gill & Co	271.99
C. C. Townsend	546.72
Class 4.—Turnbuckles:†	
Chamblin, Dulany & Scott	195.00
Chas. A. Moore	110.50
J. B. Kendall	58.50
Cameron & Barkly Co	78.00
J. H. Sternbergh	104.00
Thompson C. Gill & Co	193.70
C. C. Townsend	87.10

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated September 21, 1895; opened October 8, 1895.

Class 1.—Paints:	
John Lucas & Co	$677.50
Weil & Messner	577.50
Chas. M. Childs & Co	606.25
James Langmuir	582.50
Shoemaker & Busch	711.30
General Equipment and Engineering Co	572.50
Chas. H. Pleasants*	455.00
Class 2.—Japan drier:	
Union Supply Co	325.00
John Lucas & Co	375.00
Excelsior Varnish Works*	210.00
Queens County Varnish Works	390.00
Anglo-American Varnish Co	315.00
Chas. M. Childs & Co	260.00
James Langmuir	308.70
Shoemaker & Busch	287.50
General Equipment and Engineering Co	465.00
Chas. H. Pleasants	405.00
Class 3.—Linseed oil:	
Manhattan Oil Co	2,350.00
Chas. M. Childs & Co	2,350.00
R. P. Rowe	2,375.00
Fiske Bros.*	2,324.00
Class 4.—Tallow:	
James Langmuir	154.90
Fiske Bros.*	144.80
Chas. H. Pleasants	147.50
Class 5.—Turpentine:	
Chas. M. Childs & Co	$1,875.00
Fiske Bros.*	1,745.00
Chas. H. Pleasants	1,862.50
Class 6.—Soap:	
John H. Tissot, jr.*	350.00
Manhattan Supply Co	390.00
General Equipment and Engineering Co	374.00
Class 7.—Screws, etc.:	
Chas. A. Moore*	70.97
John H. Tissot, jr	82.52
Manhattan Supply Co	77.24
Brooklyn Hardware and Sporting Goods Co	73.16
Class 8.—Brass rod, etc.:	
Geo. L. Neville*	434.30
Chas. A. Moore	482.60
A. P. Swoyer & Co	435.72
Ansonia Brass and Copper Co	436.50
Ericsson & Hall	456.29
Manhattan Supply Co	474.75
Brooklyn Hardware and Sporting Goods Co	787.00
Class 9.—Washers, etc.:	
Manhattan Supply Co.*	98.25
Class 10.—Meconite plates, etc.:	
Manhattan Supply Co.*	109.70
Class 11.—Rubber rod:	
Thompson C. Gill & Co	410.00
Manhattan Supply Co.*	366.50

Schedule of proposals for supplies for the Mare Island Navy-Yard under Bureau advertisement dated September 20, 1895; opened October 15, 1895.

Class 1.—Brushes and brooms:	
W. P. Fuller & Co	$474.60
Nelms & Co	384.90
F. N. Woods*	371.67
Francis Harral	424.22
Class 2.—Padlocks:	
General Equipment and Engineering Co.*	$120.00
Miller, Sloss & Scott	214.80
Wakefield Baker	171.60

* Accepted.

† No award.

Schedule of proposals for supplies for the Mare Island Navy-Yard, etc.—Continued.

Class 2.—Padlocks—Continued.	
Dunham, Carrigan & Hayden Co...	$181.20
Geo. F. Hawley	163.20
Class 3.—Packing:	
Manhattan Supply Co	410.00
Bowers Rubber Co	549.50
New York Belting and Packing Co.	(†)
Thompson C. Gill & Co	327.25
General Equipment and Engineering Co	393.00
Miller, Sloss & Scott	457.66
Dunham, Carrigan & Hayden Co	465.00
Francis Harral*	393.59
Boston Woven Hose and Rubber Co	455.50
Class 4.—Sheet gum:	
Bowers Rubber Co	120.00
New York Belting and Packing Co	156.00
General Equipment and Engineering Co.*	99.00
Francis Harral	126.00
Boston Woven Hose and Rubber Co	135.00
Class 5.—Sheet gum (pure):	
Bowers Rubber Co.*‡	180.00
New York Belting and Packing Co	208.00
General Equipment and Engineering Co	190.00
Francis Harral	197.60
Boston Woven Hose and Rubber Co	180.00
Class 6.—Paints:	
Chas. M. Yates	1,148.12
John Lucas & Co	1,206.90
James Langmuir*	1,060.35
W. P. Fuller & Co	1,170.26
General Equipment and Engineering Co	1,396.95
Chas. H. Pleasants	1,219.99
Class 7.—Alcohol:	
W. P. Fuller & Co.*	1,255.00
Class 8.—Concentrated lye:	
Manhattan Supply Co	188.00
Fiske Bros	184.00
W. P. Fuller & Co.*	118.00
General Equipment and Engineering Co	175.00
Chas. H. Pleasants	140.00
Class 9.—White lead:	
Chas. M. Yates	3,000.00
Fiske Bros	3,041.00
Wm. S. Miller	2,720.00
James Langmuir*	2,671.00
W. P. Fuller & Co	2,850.00
Class 10.—Red lead:	
Chas. M. Yates	2,875.00
Fiske Bros	2,775.00
Wm. S. Miller	2,620.00
James Langmuir*	2,525.00
W. P. Fuller & Co	2,750.00
Class 11.—White and crown zinc:	
Chas. M. Yates	3,525.50
John Lucas & Co	3,505.00
James Langmuir*	3,368.50
W. P. Fuller & Co	3,550.50
Class 12.—Shellac:	
Chas. M. Yates	$1,075.00
Fiske Bros	1,007.50
W. P. Fuller & Co.*	1,063.00
General Equipment and Engineering Co	1,112.00
Class 13.—Varnish:	
Chas. M. Yates	320.00
John Lucas & Co	324.00
W. P. Fuller & Co.*	314.00
F. N. Wood	420.00
General Equipment and Engineering Co	800.00
Chas. H. Pleasants	466.00
Class 14.—Turpentine:	
Chas. M. Yates	440.00
Wm. S Miller*	410.00
W. P. Fuller & Co	430.00
Class 15.—Tallow:	
Chas. M. Yates	120.00
Fiske Bros	190.00
W. P. Fuller & Co*	107.50
Miller, Sloss & Scott	158.00
Chas. H. Pleasants	210.00
Class 16.—Lard oil:	
Fiske Bros	5,124.60
Manhattan Oil Co	5,287.50
W. P. Fuller & Co.*	4,680.00
Class 17.—Lubricating oil:	
Fiske Bros	3,000.00
Arctic Oil Works	1,800.00
W. P. Fuller & Co	1,374.00
Standard Oil Co.*	1,349.40
Class 18—Linseed oil:	
Chas. M. Yates	1,080.00
Fiske Bros	1,240.00
Wm. S. Miller	1,060.00
W. P. Fuller & Co.*‡	1,060.00
Class 19.—Garnet paper:	
Manhattan Supply Co	134.50
Fiske Bros	136.25
Cunningham, Curtiss & Welch	159.75
J. P. Nawrath	182.50
General Equipment and Engineering Co	132.25
Miller, Sloss & Scott*	121.00
Wakefield Baker	129.35
Dunham, Carrigan & Hayden Co	133.75
Francis Harral	130.00
Chas. H. Pleasants	134.00
Geo. F. Hawley	124.75
Class 20.—Cotton waste:	
Fiske Bros	840.00
W. P. Fuller & Co	804.00
J. P. Nawrath	835.00
General Equipment and Engineering Co.*	790.00
Miller, Sloss & Scott	819.50
Wakefield Baker	900.00
Chas. H. Pleasants	1,100.00

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated September 23, 1895; opened October 15, 1895.

Class 1.—Woolen socks:	
Thompson Bros.*	$5,312.50
B. Y. Pippey & Co	6,100.00
Class 2.—Blue flannel (heavy):	
B. Y. Pippey & Co.*	77,400,00
Class 3.—Evaporated apples:	
Manhattan Supply Co	470.00
Wm. G. Ahrens*	343.50
F. J. Dessoir	496.00
C. J. Caughey	437.50
John J. O'Rorke	376.50
Class 4.—Evaporated peaches:	
Manhattan Supply Co	535.00
Wm. G. Ahrens*	397.50
F. J. Deasoir	596.00
C. J. Caughey	500.00
John J. O'Rorke	426.50
Class 5.—Prunes:	
Manhattan Supply Co	$310.00
Wm. G. Ahrens	(†)
John J. O'Rorke*	269.25
Class 6.—Green coffee:	
Joseph J. O'Donohue	20,000.00
C. J. Caughey	19,930.00
John J. O'Rorke*	19,670.00
Class 7.—Tea:	
American Grocery Co.*	2,047.00
Wm. G. Ahrens	2,150.00
F. J. Dessoir	2,761.00
C. J. Caughey	3,300.00
M. A. Bronson	2,125.00
John J. O'Rorke	2,127.00
E. B. Thurber	2,360.00

* Accepted. † Informal. ‡ Decided by lot.

Schedule of proposals for the New York Navy-Yard, etc.—Continued.

Class 8.—Sugar:	
American Grocery Co.	$7,515.00
Wm. G. Ahrens	7,515.00
F. J. Dessoir	7,439.85
C. J. Caughey	7,439.85
John J. O'Rorke*†	7,439.85
Class 9.—Salt pork:	
Figge & Bro*	7,230.00
Class 10.—Salt beef:	
C. J. Caughey	3,750.00
Joseph C. Cooper*	3,325.00
Class 11.—Cap leathers:	
Manhattan Supply Co	216.00
J. P. Nawrath*	197.60
Wm. H. Horstmann & Co	220.00
Class 12.—Dress canvas, etc.:	
Manhattan Supply Co.*	92.25
L. Manne Co.	(§)
Class 13.—Silk ribbon:	
J. P. Nawrath	$250.00
Union Supply Co	172.00
Wm. H. Horstmann & Co.*	160.00
L. Manne Co	(§)
Class 14.—Rubber life belts:	
Hodgman Rubber Co.*	1,464.15
Manhattan Supply Co	1,589.00
J. P. Nawrath	1,747.90
Class 15.—Upper-deck fire hose:	
Eureka Fire Hose Co	1,400.00
Francis Harral*	1,118.25
General Equipment and Engineering Co	1,750.00
Revere Rubber Co	1,128.75
Class 15.—Upper-deck, etc.—Cont'd.	
Standard Supply and Equipment Co	$1,364.50
Boston Woven Hose and Rubber Co	1,137.50
Class 16.—Wash deck hose:‡	
Eureka Fire Hose Co	87.50
General Equipment and Engineering Co	350.00
Revere Rubber Co	104.12
Standard Supply and Equipment Co	311.50
Boston Woven Hose and Rubber Co	105.00
Class 17.—Fire grenades:	
Manhattan Supply Co.*	73.44
Brooklyn Hardware and Sporting Goods Co	91.80
Chas. H. Pleasants	124.44
Geo. L. Neville	79.97
Class 18.—Padlocks:	
Manhattan Supply Co	462.00
General Equipment and Engineering Co	283.20
Brooklyn Hardware and Sporting Goods Co	389.40
Francis T. Witte Hardware Co.*	255.00
Chas. A. Moore	399.90
Class 19.—Galvanized iron buckets:	
Iron Clad Manufacturing Co	375.00
Manhattan Supply Co	374.00
Brooklyn Hardware and Sporting Goods Co	374.00
Francis T. Witte Hardware Co	400.00
Thompson C. Gill & Co	174.50
Standard Supply and Equipment Co.*	110.00
Chas. A. Moore	392.00
E. B. Thurber	212.50

Schedules of proposals for coal for the naval station, Key West, Fla., under Bureau advertisement dated October 7, 1895; opened October 22, 1895.

Class 1.—Bituminous coal:‡	
Geo. L. Neville	$15,350.00
Peale, Peacock & Kerr	10,110.00
C. B. Orcutt	(§)
Class 1.—Bituminous coal—Continued.	
E. B. Townsend	$10,650.00 / 9,360.00

Schedule of proposals for supplies for the navy-yard and Naval Observatory, Washington, D. C., under Bureau advertisement dated October 5, 1895; opened October 22, 1895.

Class 1.—Brass rod:	
Geo. L. Neville	$905.40
Waterbury Brass Co.*	873.97
A. P. Swayer	878.23
E. B. Thurber	970.37
Ansonia Brass and Copper Co	878.24
Ericsson & Hall	877.95
Manhattan Supply Co	878.60
General Equipment and Engineering Co	949.45
Class 2.—Bristles:	
E. B. Thurber	3,017.00
Z. D. Gilman*	1,386.00
Class 3.—Paraffin oil:	
Standard Oil Co.*	$119.62
Class 4.—Steel forgings:	
Bethlehem Iron Co	676.00
Midvale Steel Co.*	665.60
Class 5.—Steel castings:	
Benj. Atha & Illingworth Co	16,763.12
Bethlehem Iron Co.*	15,239.20
American Steel Casting Co	17,601.27
Midvale Steel Co	18,287.04
Class 6.—3-arm protractors:	
Keuffel & Esser*	727.50

Schedule of proposals for the New York Navy-Yard under Bureau advertisement dated October 12, 1895; opened October 29, 1895.

Class 1.—Plated ware:	
Gorham Manufacturing Co	$620.88
Wilcox Silver Plate Co	572.81
Manhattan Supply Co.*	546.90
Class 2.—Chinaware:	
James M. Shaw & Co.*	540.19
John Wanamaker	606.38
Class 3.—Chinaware:	
Royal Copenhagen Porcelain Co.*	840.10
Class 4.—Chinaware:	
James M. Shaw & Co.*	258.75
Class 5.—Chinaware:	
James M. Shaw & Co.*	82.90
Class 6.—Glassware:	
James M. Shaw*	1,176.71
Class 7.—Kitchen utensils:	
Bramhall, Deane & Co	$181.16
Francis Harral*	152.64
Manhattan Supply Co	214.92
Class 8.—Kitchen utensils:	
Bramhall, Deane & Co	179.16
Francis Harral*	153.04
Manhattan Supply Co	214.92
Class 9.—Kitchen utensils:	
Bramhall, Deane & Co	270.96
Francis Harral*	222.12
Manhattan Supply Co	297.68
Class 10.—Kitchen utensils:	
Bramhall, Deane & Co	179.92
Francis Harral*	157.00
Manhattan Supply Co	213.44

* Accepted. †Decided by lot. ‡No award. §Informal.

Schedule of proposals for the New York Navy-Yard, etc.—Continued.

Class 11.—Kitchen utensils:	
Bramhall, Deane & Co	$145.68
Francis Harral *	132.48
Manhattan Supply Co	184.16
Class 12.—Kitchen utensils:	
Bramhall, Deane & Co	1,325.00
Francis Harral *	1,072.32
Manhattan Supply Co	1,363.64
Class 13.—Rubber life belts:	
James Reilly Repair and Supply Co.	6,000.00
Hodgman Rubber Co.*	5,160.00
Manhattan Supply Co	5,625.00
Class 14.—Brushes:	
John Early *	1,038.52
James Reilly Repair and Supply Co.	1,079.99
Shoemaker & Busch	1,139.80
Geo. F. Mitchell	1,153.61
Francis Harral	1,184.00
Manhattan Supply Co	1,153.50
E. B. Thurber	1,105.71
Class 15.—Locks:	
J. H. Chesley & Co	88.95
Francis Harral	91.00
Manhattan Supply Co	179.75
Brooklyn Hardware and Sporting Goods Co.*	74.00
Class 16.—Solder:	
Chas. A. Moore *	99.40
James Reilly Repair and Supply Co.	105.00
Colwell Lead Co	109.80
Merchant & Co	100.00
S. C. Forsaith Machine Co	104.00
Shoemaker & Busch	102.40
Chas. H. Pleasants	132.50
General Equipment and Engineering Co	102.00
Manhattan Supply Co	120.00
E. B. Thurber	110.00
Class 17.—Bar iron:	
Chas. A. Moore	1,392.00
Frank H. Woodruff	1,040.00
Lebanon Chain Works	1,020.00
General Equipment and Engineering Co.*	936.00
Class 18.—Pumice stone:	
Shoemaker & Busch *	$36.00
Chas. H. Pleasants	39.50
General Equipment and Engineering Co	70.75
Francis Harral	46.00
Manhattan Supply Co	46.00
E. B. Thurber	52.00
Class 19.—Graphite:	
Shoemaker & Busch	67.45
Chas. H. Pleasants *	37.50
General Equipment and Engineering Co	74.95
Francis Harral	85.00
Manhattan Supply Co	74.50
E. B. Thurber	82.50
Class 20.—Shovels:	
Chas. A. Moore	284.50
Geo. F. Mitchell *	224.50
Francis Harral	257.50
Manhattan Supply Co	282.00
E. B. Thurber	280.50
Class 21.—Saws:	
S. C. Forsaith Machine Co	190.26
Francis Harral *	87.20
Manhattan Supply Co	204.00
Brooklyn Hardware and Sporting Goods Co	92.20
E. B. Thurber	129.00
Class 22.—Tools:	
Francis Harral	81.15
Manhattan Supply Co	136.10
Brooklyn Hardware and Sporting Goods Co.*	74.18
E. B. Thurber	92.26
Class 23.—Files:	
Chas. A. Moore	580.42
James Reilly Repair and Supply Co.	608.74
J. Barton Smith Co.*	513.78
F. P. May & Co	588.53
General Equipment and Engineering Co	595.10
Joseph A. McKee	776.78
Wm. H. Spowers	546.02
Brooklyn Hardware and Sporting Goods Co	544.24

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated October 18, 1895; opened November 5, 1895.

Class 1.—Zinc:	
General Equipment and Engineering Co	$599.00
S. C. Forsaith Machine Co	477.00
Geo. L. Neville	500.00
E. B. Thurber	725.00
J. B. Kendall	450.00
James Clendenin *	399.00
Chas. A. Moore	740.00
Class 2.—Brushes, etc.:	
F. P. May & Co. *	107.95
Geo. L. Neville	145.00
E. B. Thurber	129.25
Manhattan Supply Co	131.30
Class 3.—Manila rope:	
General Equipment and Engineering Co	172.50
Barber & Ross	184.00
F. P. May & Co	169.63
Geo. L. Neville	168.59
E. B. Thurber	184.00
Union Supply Co	166.75
James Symington *	161.00
Fearing, Hall & Whiton	166.75
J. B. Kendall	166.75
Manhattan Supply Co	175.10
Class 4.—Dry goods:	
John Wanamaker	(†)
E. B. Thurber *	240.50
W. D. Clark	244.70
Manhattan Supply Co	265.10
Class 5.—Sheepskins:	
Geo. Oberne & Co. *	100.00
Class 5.—Sheepskins—Continued:	
S. C. Forsaith Machine Co	$220.00
Wm. Bolles	200.00
John H. Tissot, jr	320.00
E. B. Thurber	494.00
Union Supply Co	160.00
J. B. Kendall	224.00
Chas. A. Moore	324.00
Manhattan Supply Co	470.00
Class 6.—Leather:	
Geo. Oberne & Co	638.25
Max Frank *	568.03
S. C. Forsaith Machine Co	605.58
Wm. Bowles	710.45
E. B. Thurber	667.13
Union Supply Co	672.90
Fearing, Hall & Whiton	690.95
Chas. A. Moore	709.00
Manhattan Supply Co	666.40
Class 7.—Forgings:	
Bethlehem Iron Co. *	1,411.20
Midvale Steel Co	1,505.28
Class 8.—Castings:	
Bethlehem Iron Co	12,037.50
Benj. Atha & Illingworth Co. *	11,556.00
New York Frog and Switch Co	14,445.00
Midvale Steel Co	15,408.00
Class 9.—Castings:	
Bethlehem Iron Co	4,012.50
Benj. Atha & Illingworth Co. *	3,852.00
New York Frog and Switch Co	4,815.00
Midvale Steel Co	5,136.00

* Accepted.

† Informal.

Schedule of proposals for supplies for the Boston Navy-Yard under Bureau advertisement dated October 19, 1895; opened November 5, 1895.

Class 1.—Whale oil:	
Alden Spear's Son & Co	$1,260.00
Swan & Finch Co.*	1,200.00
Wm. Bowles	1,560.00
Class 1.—Whale oil—Continued.	
Geo. L. Neville	$2,100.00
Manhattan Oil Co	1,260.00
Fiske Bros	1,275.00

Schedule of proposals for coal for the naval station, Key West, Fla., under Bureau advertisement dated October 18, 1895; opened November 12, 1895.

Class 1.—Coal:	
S. M. Hamilton & Co	$9,720.00
Berwind-White Coal Mining Co	10,050.00
Peale, Peacock & Kerr*	9,120.00
Nattingham & Wrenn Co	12,600.00
Class 1.—Coal—Continued.	
Geo. L. Neville	$12,450.00
E. B. Townsend	11,250.00 / 9,900.00
Davis Coal and Coke Co	9,960.00

Schedule of proposals for supplies for the navy-yard, League Island, Pa., under Bureau advertisement dated October 24, 1895; opened November 12, 1895.

Class 1.—Wrought-iron anchors.†	
Class 2.—Cast-steel anchors.‡	
Penn Steel Casting and Machine Co	$14,950.00
Bethlehem Iron Co	16,250.00
Class 2.—Cast-steel anchors—Continued.	
American Steel Casting Co	$17,200.00
Midvale Steel Co	(§)

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated October 25, 1895; opened November 12, 1895.

Class 1.—Pickles:	
James F. McGuire	$1,222.68
F. Toehrenbach & Co.*	1,184.21
Class 2.—Silver-plated ware:	
Wilcox Silver Plate Co.*	1,235.40
Class 3.—Silver-plated ware:	
Wilcox Silver Plate Co.*	810.21
Class 4.—Silver-plated ware:	
Wilcox Silver Plate Co.*	568.74
Class 5.—China ware:	
James M. Shaw & Co.*	366.68
Class 6.—China ware:	
Royal Copenhagen Porcelain Co.*	$296.34
Class 7.—China ware:	
Royal Copenhagen Porcelain Co.*	215.28
Class 8.—Glassware:	
James M. Shaw & Co.*	244.68
Class 9.—Glassware:	
James M. Shaw & Co.*	193.89
Class 10.—Glassware:	
James M. Shaw & Co	140.28

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated November 9, 1895; opened November 26, 1895.

Class 1.—Forgings:	
Bethlehem Iron Co.*	$14,848.00
Midvale Steel Co	15,776.00
Class 2.—Castings:	
Isaac G. Johnson & Co.*	4,620.00
Class 2.—Castings—Continued.	
American Steel Casting Co	$4,935.00
Bethlehem Iron Co	4,725.00
Midvale Steel Co	6,615.00

Schedule of proposals for supplies for the navy-yard, Mare Island, Cal, under Bureau advertisement dated October 26, 1895; opened November 26, 1895.

Class 1.—Mattresses: ‡	
Saml. Beall	$1,550.00
David Klopstock	1,700.00
Geo. D. Cooper	1,875.00
Henry Bernhard	1,650.00
Elias A. Gimbel	1,600.00
Class 2.—Blankets: ‡	
B. Y. Pippey & Co	2,300.00
S. Dannenbaum	2,375.00
Wm. McCann	2,350.00
Class 3.—Blacking brushes: ‡	
Harry Unna	280.00
Miller, Sloss & Scott	260.00
Class 4.—Pickles:	
Thos. H. Dowling	238.00
Herman Levi	234.50
Pacific Vinegar and Pickle Works*	232.50
Class 5.—Salt pork:	
Edward A. Cudahy	4,625.00
Western Meat Co.*	3,365.00
Roth, Blum & Co	3,825.00
Edward Pond	3,625.00
Henry Mohr	3,475.00
Class 6.—Salt beef:	
Western Meat Co	1,246.00
Roth, Blum & Co	1,280.00
Henry Mohr*	1,030.00
Class 7.—Sugar:	
Saml. I. Wormser*	$2,562.50
Herman Levi	2,589.50
Jones & Co	2,615.00
Class 8.—Tea:	
Saml. I. Wormser	735.00
Thomas J. Dowling*	592.50
Herman Levi	720.00
Jones & Co	590.40
Class 9.—Leather belting:	
Milton H. Cook	451.00
Miller, Sloss & Scott	540.12
Chas. Carter Nichols	481.85
L. P. Degen	460.51
Graton & Knight Manufacturing Co.*	363.76
Class 10.—Hardware:	
Miller, Sloss & Scott*	261.32
Francis Harral	223.33
Class 11.—Locks:	
Miller, Sloss & Scott	285.25
Francis Harral*	166.16
Class 12.—Lumber:	
Wm. Walker	1,153.50
Wm. H. Leahy*	1,140.00
Class 13.—Coal for Puget Sound:	
C. I. Smith*	425.00

* Accepted. † No bids received ‡ No award. § Informal.

Schedule of proposals for the New York Navy-Yard under Bureau advertisement dated November 21, 1895; opened December 10, 1895.

Class 1.—Rice:	
Wm. G. Ahrens	$1,020.00
E B Thurber	1,094.00
E. F. Cuming	975.00
F. J. Dessoir	1,324.00
C. J. Caughey	1,125.00
Wm. J. Griffiths	950.00
John J. O'Rorke *	934.00
Class 2.—Raisins:	
Wm. G. Ahrens	140.00
E. F. Cuming	89.00
F. J. Dessoir	114.40
C. J. Caughey *	80.00
John J. O'Rorke	107.40
Class 3.—Tomatoes:	
Wm. G. Ahrens	1,112.50
E. F. Cuming	700.00
F. J. Dessoir	807.00
C. J. Caughey *	680.00
Sidney Thursby	695.00
John J. O'Rorke	692.50
Class 4.—Sausage meat:	
Chas. F. Sullivan *	3,557.50
Sidney Thursby	3,725.00
Class 5.—Sirup:	
Union Supply Co	487.60
Wm. G. Ahrens	360.00
E. F. Cuming	560.00
C. J. Caughey	500.00
John J. O'Rorke	355.40
Class 6.—Vinegar:	
Wm. G. Ahrens	490.00
F. J. Dessoir	598.40
F. Foehrenbach & Co	356.00
John J. O'Rorke *	318.80
Class 7.—Beans:	
Wm. G. Ahrens	2,638.00
E. B. Thurber	2,256.00
C. F. Mautage	2,448.00
E. F. Cuming *	1,987.50
Manhattan Supply Co	2,346.00
F. J. Dessoir	3,209.00
C. J. Caughey	2,220.00
Ehrgott & Newman	2,169.00
John J. O'Rorke	2,417.00
Class 8.—Butter:	
James F. Oyster	7,530.00
Lloyd I. Seaman *	7,437.50
Class 9.—Biscuit:	
F. S. Wertz & Co	3,200.00
E. B. Thurber	2,385.00
C. J. Caughey	2,500.00
Treadwell & Harris Baking Co. *	2,045.00
Class 10.—Blue flannel:	
Wendell, Fay & Co. *	4,149.50
B. Y. Pippey & Co	4,600.00
Class 11.—Brooms:	
E. B. Thurber	$1,800.00
James Reilly Repair and Supply Co.	1,387.50
Manhattan Supply Co	1,288.00
Michael Cavanagh	1,090.00
Francis Harral	1,190.00
John Wanamaker	1,320.00
John A. Driscoll	1,240.00
Brooklyn Hardware and Sporting Goods Co	1,142.00
General Equipment and Engineering Co	1,194.00
John H. Tissot, jr	1,270.00
John Early *	1,075.00
Class 12.—Needles:	
Wm. H. Horstmann Co	192.00
E. B. Thurber	220.00
Manhattan Supply Co	180.00
Francis Harral	195.00
John H. Tissot, jr. *	175.00
Class 13.—Rubber buttons:	
India Rubber Comb Co. *	337.50
Wm. H. Horstmann Co	345.00
Class 14.—Jackknives:	
W. F. Rockwell * †	1,625.00
Manhattan Supply Co	1,625.00
Class 15.—Hardware:	
E. B. Thurber	173.75
Manhattan Supply Co	122.00
Francis Harral *	98.00
John H. Tissot, jr	158.25
Class 16.—Desk locks:	
Manhattan Supply Co	180.00
Brooklyn Hardware and Sporting Goods Co. *	93.50
Class 17.—Coffee tins:	
Fiske Bros. *	622.50
Mary Beggs	627.00
Wm. G. Ahrens	750.00
E. B. Thurber	765.00
John J. O'Rorke	720.00
Class 18.—Copying presses:	
E. B. Thurber	885.00
Manhattan Supply Co	148.00
John H. Tissot, jr. *	130.00
Class 19.—Air pumps:	
Geo. F. Blake Manufacturing Co	6,592.00
M. T. Davidson *	5,200.00
Manhattan Supply Co	7,480.00
Class 20.—Steam pumps:	
Geo. F. Blake Manufacturing Co. *	2,743.00
M. T. Davidson	3,975.00
Manhattan Supply Co	4,154.00

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated November 23, 1895; opened December 10, 1895.

Class 1.—Galvanized steel wire:	
Manhattan Supply Co. *	$578.00
Geo. L. Neville	610.00
Trenton Iron Co	636.25
General Equipment and Engineering Co	610.00
Washburn & Moen Manufacturing Co	870.00
Class 2.—Hammock and bag canvas:	
Manhattan Supply Co	$5,237.50
E. B. Thurber	5,675.00
Geo. L. Neville	6,250.00
John H. Tissot, jr	7,000.00
Fearing, Hall & Whiton *	4,652.50

Schedule of proposals for coal for Honolulu, Hawaiian Islands, under Bureau advertisement dated November 19, 1895; opened December 14, 1895.

Class 1.—Coal. ‡	
John L. Howard	$8,220.00
Henry Rosenfeld	7,160.00
Class 1.—Coal—Continued:	
C. H. Jouett	$10,500.00 / 9,375.00

* Accepted. † Decided by lot. ‡ No award.

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated November 20, 1895; opened December 17, 1895.

Class 1.—Brushes:	
James Reilly Repair and Supply Co.	$1,434.90
John Early	1,443.63
E. B. Thurber	1,153.80
Brooklyn Hardware and Sporting Goods Co	1,152.78
Geo. F. Mitchell *	972.00
Manhattan Supply Co	1,355.13
Class 2.—Screws:	
Chas. A. Moore	135.95
James Reilly Repair and Supply Co.	137.18
Francis Harral	138.65
Barber & Ross	127.16
A. P. Swoyer & Co	134.23
Geo. L. Neville *	111.95
Brooklyn Hardware and Sporting Goods Co	127.95
Manhattan Supply Co	137.10
J. H. Chesley & Co	128.64
Morse Burtis	135.80
General Equipment and Engineering Co	134.15
Class 3.—Lacing leather:	
Geo. Oberne	81.00
Chas. A. Moore	72.00
James Reilly Repair and Supply Co.	72.00
E. B. Thurber	76.50
Wm. Bowles	72.00
Brooklyn Hardware and Sporting Goods Co	76.50
Manhattan Supply Co	72.00
General Equipment and Engineering Co. *	71.95
Class 4.—White pine:	
Chas. E. Pell	5,911.50
Watson & Pittinger *	5,092.00
Geo. L. Neville	9,220.00
Class 5.—Yellow pine:	
Chas. E. Pell	1,152.00
Watson & Pittinger *	1,050.00
Geo. L. Neville	1,600.00
Class 6.—White ash:	
Chas. E. Pell	474.00
Watson & Pittinger *	450.00
Class 7.—Packing:	
Boston Woven Hose and Rubber Co.	2,089.00
Chas. A. Moore	2,017.15
James Reilly Repair and Supply Co *	1,738.00
E. B. Thurber	2,077.38
Francis Harral	2,017.00
Brooklyn Hardware and Sporting Goods Co	2,029.50
Manhattan Supply Co	2,079.50
John H. Tissot, jr	2,027.00
General Equipment and Engineering Co	1,962.75
Class 8.—Paints:	
E. B. Thurber	430.00
Fiske Bros	389.00
Chas. H. Pleasants	366.00
Manhattan Supply Co	400.00
Chas. M. Childs & Co	660.00
General Equipment and Engineering Co. *	313.00
Class 9.—Black paint:	
Taylor Paint and Oil Co	$325.00
E. B. Thurber	362.50
John Lucas & Co	287.50
Smith, Kline & French Co.*	250.00
Chas. H. Pleasants	355.00
Weil & Messner	280.00
Chas. M. Childs & Co	600.00
General Equipment and Engineering Co	260.00
Class 10.—Alcohol:	
Smith, Kline & French Co.*	5,040.00
Class 11.—Gum shellac:	
E. B. Thurber	3,575.00
Fiske Bros. Refining Co.*	3,347.00
M. Feigel	3,700.00
Chas. M. Childs & Co	3,575.00
Class 12.—Tallow:	
Fiske Bros. Refining Co.*	324.50
Wm. Bowles	450.00
Chas. H. Pleasants	387.00
Lederer & Wolf	350.00
Joseph Hecht & Sons	400.00
Class 13.—Pipe and fittings:	
James Reilly Repair and Supply Co.	417.12
A. P. Swoyer & Co	435.47
Brooklyn Hardware and Sporting Goods Co	479.40
Manhattan Supply Co	411.52
E. F. Keating	405.50
S. C. Forsaith Machine Co	548.72
Morse Burtis *	394.05
General Equipment and Engineering Co	481.92
Class 14.—Tools:	
Chas. A. Moore	283.02
James Reilly Repair and Supply Co.	349.89
Francis Harral *	261.75
Geo. L. Neville	496.25
Brooklyn Hardware and Sporting Goods Co	305.31
Manhattan Supply Co	322.00
John H. Tissot, jr	291.14
Class 15.—Lard oil:	
Fiske Bros. Refining Co.*	18,350.00
Manhattan Oil Co	18,700.00
Wm. Bowles	18,800.00
Class 16.—Spruce plank:	
Chas. E. Pell	315.00
Watson & Pettinger * †	315.00
Class 17.—Hickory butts:	
E. B. Thurber	107.00
Watson & Pettinger *	71.00
Geo. L. Neville	135.00
Class 18.—Twist drills:	
James Reilly Repair and Supply Co.	186.00
Francis Harral	183.45
A. P. Swoyer & Co	161.02
Pratt & Whitney Co.*	155.92
Brooklyn Hardware and Sporting Goods Co	188.00
Manhattan Supply Co	201.60
S. C. Forsaith Machine Co	(‡)

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated December 6, 1895; opened December 26, 1895.

Class 1.—Manila hemp:	
A. D. Welds Sons *	$11,725.00
Class 1.—Manila hemp—Continued.	
Manhattan Supply Co	$12,320.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated December 7, 1895; opened December 26, 1895.

Class 1.—White pine:	
Barber & Ross	$870.00
Philip Walsh & Sons	838.50
Grayson & Cain *	796.00
W. T. F. B. Weaver	840.00
Nathan B. Gaskill	802.00
Class 2.—Hardware:	
E. B. Thurber	$53.38
Barber & Ross	28.43
General Equipment and Engineering Co	29.76
James Reilly Repair and Supply Co.	42.03
F. P. May & Co	26.24

* Accepted. † Decided by lot. ‡ Informal.

Schedule of proposals for supplies for the navy-yard, Washington, D. C., etc.—Continued.

Class 3.—Belting:	
E. B. Thurber	$132.00
Ira B. White	145.00
Barber & Ross	156.90
National Leather Belting Co.*	111.37
General Equipment and Engineering Co	146.64
Loeb Bros	118.20
James Reilly Repair and Supply Co	137.45
F. P. May & Co	132.50
Graton & Knight Manufacturing Co	118.00
J. B. Kendall	149.80
Geo. Oberne	127.65
Class 4.—Tools:	
John H. Tissot, jr	371.64
S. C. Forsaith Machine Co	327.03
Ira B. White	292.13
Barber & Ross	322.60
Manhattan Supply Co	306.16
General Equipment and Engineering Co	303.01
Francis Harral*	266.66
Class 4.—Tools—Continued.	
James Reilly Repair and Supply Co.	$281.33
F. P. May & Co	307.84
Class 5.—Soft steel:	
Frank H. Woodruff	98.66
Barber & Ross	96.90
J. B Kendall*	63.86
Class 6.—Files:	
John H. Tissot, jr	350.98
Barber & Ross	393.56
Manhattan Supply Co	432.70
General Equipment and Engineering Co	400.40
F. P. May & Co.*	316.05
J. B. Kendall	326.16
Class 7.—Drill rod:	
Frank H. Woodruff	88.00
John H. Tissot, jr	89.00
E. J. Brooks & Co.*	82.42
Barber & Ross	117.75
Joseph A. McKee	117.00
General Equipment and Engineering Co	158.41
J. B. Kendall	88.31

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated December 4, 1895; opened December 26, 1895.

Class 1.—Bleached cotton drill:	
Manhattan Supply Co*	$3,478.00
E. B. Thurber	3,592.00
John H. Tissot, jr	2,400.00
Class 2.—Electrical supplies:	
Manhattan Supply Co	104.65
Western Electric Co.*	42.77
Class 3.—Electrical supplies:	
Manhattan Supply Co.*	193.80
Western Electric Co	202.50
Class 4.—Electrical supplies:	
Manhattan Supply Co	65.12
Western Electric Co	59.22
General Electric Co.*	46.45
Class 5.—Electrical supplies:	
Manhattan Supply Co	269.00
James A. Machado*	220.50
Western Electric Co	278.50
Class 6.—Electrical supplies:	
Manhattan Supply Co	268.66
Western Electric Co	178.62
Class 6.—Electrical supplies—Cont'd.	
General Electric Co.*	$88.72
Class 7.—Electrical supplies:	
Manhattan Supply Co	500.35
Porter's Son & Co	401.75
Wm. Porter's Sons	413.00
Western Electric Co	401.63
Page Bros. & Co.*	380.17
Class 8.—Electrical supplies:	
Manhattan Supply Co	43.72
Western Electric Co	28.60
General Electric Co.*	25.50
Class 9.—Electrical supplies:	
Manhattan Supply Co	888.00
James A. Machado	215.16
Western Electric Co.*	210.05
General Electric Co	319.00
Class 10.—Electrical supplies:	
Manhattan Supply Co	351.78
Western Electric Co*	315.63

Schedule of proposals for supplies for the Mare Island Navy-Yard under Bureau advertisement dated December 5, 1895; opened January 2, 1896.

Class 1.—Steel crank shaft:†	
Bethlehem Iron Co. { Bid *a*	$0.35
Bethlehem Iron Co. { Bid *b*	.29
Midvale Steel Co. { Bid *a*	.34
Midvale Steel Co. { Bid *b*	.27
Class 2.—Hardware:	
Dunham, Carrigan & Hayden Co	649.85
Miller, Sloss & Scott	648.90
Geo. T. Hawley*	601.20
General Equipment and Engineering Co	975.40
Class 3.—Bar iron:	
Miller, Sloss & Scott*	426.75
Lebanon Chain Works	433.80
Class 4.—Flax packing:	
Dunham, Carrigan & Hayden Co	810.00
Boston Woven Hose and Rubber Co.*	570.00
Miller, Sloss & Scott	694.00
Geo. T. Hawley	745.00
Manhattan Supply Co	768.00
A. T. Dunbar	650.00
General Equipment and Engineering Co	734.78
Class 5.—Graphite:	
Miller, Sloss & Scott	$152.00
Chas. M. Yates	167.50
Manhattan Supply Co	210.00
General Equipment and Engineering Co.*	149.80
James G. Allen	150.00
Class 6.—Ice machine oil:	
Chas. M. Yates*	99.00
Standard Oil Co	120.00
Class 7.—Pet cocks:	
Miller, Sloss & Scott*	52.88
Class 8.—Files:	
J. Barton Smith Co.*	256.86
Dunham, Carrigan & Hayden Co	287.25
Miller, Sloss & Scott	296.42
Geo. T. Hawley	337.56
General Equipment and Engineering Co	503.76
Class 9.—Emery cloth:	
Dunham, Carrigan & Hayden Co.*	107.25
Miller, Sloss & Scott	148.35
E. J. Brooks Co	119.85
Geo. T. Hawley	123.75
Chas. M. Yates	126.00

* Accepted.

† Per pound

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated December 19, 1895; opened January 7, 1896.

Class 1.—Cable iron:	
General Equipment and Engineering Co.*	$10,045.50
Lebanon Iron Co	12,600.00
Brown & Co	10,080.00
S. C. Forsaith Machine Co	11,625.00
Monongahela Iron and Steel Co	23,520.00
Class 2.—Galvanized steel wire:	
Manhattan Supply Co	257.60
General Equipment and Engineering Co	249.40
Class 2.—Galvanized steel wire—Cont'd.	
Washburn & Moen Manufacturing Co	$480.00
Trenton Iron Co.*	230.00
Class 3.—Beeswax:	
General Equipment and Engineering Co	55.48
Thomas Kelly	66.00
J. A. Mahood	52.50
S. C. Forsaith Machine Co.*	48.75

Schedule of proposals for coal for Kingston, Jamaica, and Key West, Fla., under Bureau advertisement dated December 20, 1895; opened January 11, 1896.

Class 1.—Coal:†	
C. B. Orcutt	$8,100.40
S. M. Hamilton & Co	7,900.00
E. B. Townsend	9,700.00
Peale, Peacock & Kerr	7,880.00
Berwind-White Coal Mining Co	7,400.00
Class 2.—Coal:†	
C. B. Orcutt	11,795.00
Class 2.—Coal—Continued.	
S. M. Hamilton & Co	$11,200.00
E. B. Townsend	16,975.00
Davis Coal and Coke Co	15,300.00
Peale, Peacock & Kerr	10,780.00
Berwind-White Coal Mining Co	11,550.00
Geo. B. Dilkes & Co	11,655.00

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated December 28, 1895; opened January 14, 1896.

Class 1.—Cap cloth:	
Buena Vista Cassimere Mills	$18,937.50
Wendell, Fay & Co.*	18,859.50
B. Y. Pippey & Co	20,550.00
Class 2.—Evaporated apples:	
Wm. G. Ahrens	810.00
C. J. Caughey	850.00
John J. O'Rorke*	797.00
Class 3.—Salt pork:	
Chas. F. Mattlage*	6,270.00
C. J. Caughey	6,730.00
Figge & Bro	6,390.00
Class 4.—Cotton canvas:	
G. K. Sheridan & Co.*	1,768.00
Manhattan Supply Co	1,832.00
Charles Barry	1,875.00
E. B. Thurber	1,847.50
Thomas Kelly	1,937.00
Class 5.—Coal baskets:	
John H. Tissot, jr	1,500.00
General Equipment and Engineering Co	5,000.00
Manhattan Supply Co	1,294.00
John Early*	1,080.00
Francis Harral	1,330.00
Class 6.—Tools:	
John H. Tissot, jr	310.21
Manhattan Supply Co	865.30
James Reilly Repair and Supply Co	251.48
Francis Harral*	234.43
Brooklyn Hardware and Sporting Goods Co	266.99
Class 7.—Files:	
John H. Tissot	63.92
J. Barton Smith Co.*	51.07
Manhattan Supply Co	69.94
Chas. A. Moore	54.99
James Reilly Repair and Supply Co	57.17
Class 7.—Files—Continued:	
Barber & Ross	$61.59
Brooklyn Hardware and Sporting Goods Co	64.09
Class 8.—Gauges:	
Manhattan Supply Co	47.10
Chas. A. Moore*	55.34
Francis Harral	40.20
Barber & Ross	47.91
Class 9.—Oil filters:	
Manhattan Supply Co	146.10
Western Electric Co	145.41
Chas. A. Moore*	137.45
Class 10.—Tachometers:	
Western Electric Co	180.00
James Reilly Repair and Supply Co.*	168.00
Class 11.—Testing generators, etc.:	
Western Electric Co.*	374.88
Class 12.—Red lead:	
General Equipment and Engineering Co	2,400.00
James Langmuir*	2,229.90
Fiske Bros	2,314.00
Wetherell & Bro	2,597.50
Chas. M. Childs & Co	2,525.00
Smith, Kline & French Co	2,375.00
Geo. L. Neville	2,392.50
E. B. Thurber	2,350.00
Class 13.—Polishing paste:	
John H. Tissot, jr	1,700.00
Manhattan Supply Co	1,797.00
Fiske Bros.*	1,666.67
Class 14.—Paints:	
John H. Tissot, jr	228.50
James Langmuir	186.50
Chas. H. Pleasants	366.50
Chas. M. Childs & Co	190.00
Geo. L. Neville*	161.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated January 11, 1896; opened January 28, 1896.

Class 1.—Tin:	
Geo. L. Neville	$1,400.00
J. B. Kendall	1,369.00
James Clendenin*	1,348.00
S. C. Forsaith Machine Co	1,410.00
Jesse Lewisohn	1,375.00
General Equipment and Engineering Co	1,514.00
Class 2.—Muslin:	
Geo. L. Neville	799.94
James H. Tissot, jr	950.00
Class 2.—Muslin—Continued.	
W. D. Clark & Co	$770.00
Manhattan Supply Co*	874.80
Francis Harral	780.00
James Reilly Repair and Supply Co	766.00
F. M. McWilliams	766.00
Thomas Kelly	725.80
Class 3.—Hardware:	
Geo. L. Neville	5,717.47
John H. Tissot	5,579.98

*Accepted.

†No award.

Schedule of proposals for supplies for the navy-yard, Washington, D. C., etc.—Continued.

Class 3.—Hardware—Continued.

Henry F. Chorley	$6,619.70
J. B. Kendall*	2,910.33
Barber & Ross	3,800.00
F. P. May & Co.	2,980.42
Chas. A. Moore	3,126.87
Manhattan Supply Co.	3,158.30
Francis Harral	3,600.00
Brooklyn Hardware and Sporting Goods Co.	3,038.03

Class 3.—Hardware—Continued.

General Equipment and Engineering Co.	$4,637.21
F. M. McWilliams	3,068.53

Class 4.—Lumber:

Grayson & Cain	2,943.75
Geo. L. Neville	4,276.90
W. T. Galliher & Bro.*	2,769.00
Church & Stephenson	2,911.00
Barber & Ross	3,047.50
Nathan B. Gaskell	3,557.00

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated January 18, 1896; opened February 4, 1896.

Class 1.—Electrical supplies:

Western Electric Co.*	$87.00

Class 2.—Electrical supplies:

Western Electric Co	568.75
General Electric Co.*	421.99

Class 3.—Electrical supplies:

Western Electric Co*	206.50

Class 4.—Electrical supplies:

Western Electric Co	1,588.75
General Electric Co	1,665.55
Bishop Gutta Percha Co.*	1,506.50

Class 5.—Electrical supplies:

Western Electric Co.*	73.00
Wm. Porter's Sons	105.00
Porter's Sons & Co	118.00

Class 6.—Electrical supplies:

Chas. Cory & Son	355.70
Western Electric Co*	350.25

Class 7.—Electrical supplies:

Francis Harral*	368.00
Western Electric Co	377.60
Manhattan Supply Co.	508.00

Class 8.—Electrical supplies:

Western Electric Co	508.68
General Electric Co.*	299.63

Class 9.—Electrical supplies:

Western Electric Co	150.00
James Reilly Repair and Supply Co.*	100.00
General Electric Co.	110.00

Class 10.—Electrical supplies:

Western Electric Co	385.00
Wm. Porter's Sons*	85.70
Porter's Son & Co.	106.50

Class 11.—Electrical supplies:

Western Electric Co*	824.00
General Equipment and Engineering Co.	836.40
General Electric Co.	863.25
Bishop Gutta Percha Co	836.00

Class 12.—Electrical supplies:

Francis Harral*	69.50
Western Electric Co	71.00

Class 13.—Electrical supplies:

Western Electric Co	349.00
James Reilly Repair and Supply Co.*	337.10

Class 14.—Electrical supplies:

Western Electric Co	361.00
Jas. A. Machado*	346.50

Class 15.—Electrical supplies:

Chas. Cory & Son	386.57
Western Electric Co*	371.42

Class 16.—Oil paper, etc.†

Class 17.—Fire hose:

Boston Woven Hose and Rubber Co.*	1,300.00

Class 18.—Suction hose:

Boston Woven Hose and Rubber Co.*	70.20
Francis Harral	97.20
General Equipment and Engineering Co.	125.82
James Reilly Repair and Supply Co.	74.52
New Jersey Car Spring and Rubber Co.	72.90
Chas. A. Moore	113.40

Class 19.—Hose washers:

Boston Woven Hose and Rubber Co.	225.00
James Reilly Repair and Supply Co.	299.00
Manhattan Supply Co.	244.50
John H. Tissot, jr.	192.00
New Jersey Car Spring and Rubber Co.*	121.00

Class 20.—Sperm oil:

Manhattan Oil Co.*	$4,575.00
Swan & Finch Co.	5,000.00
Geo. Delano's Sons	4,800.00
Fiske Bros.	4,950.00

Class 21.—Junction boxes:

Western Electric Co	1,509.55
General Electric Co.*	1,160.63

Class 22.—Fixtures:

Page Bros. & Co	1,021.92
Western Electric Co	943.80
William Porter's Sons*	929.75
Porter's Son & Co.	930.50

Class 23.—Switchboard, etc.:

General Electric Co.*	1,127.00
Jas. A. Machado	1,130.00

Class 24.—Wire, etc.:

Western Electric Co	1,251.45
General Electric Co	1,399.99
Bishop Gutta Percha Co.*	1,236.55

Class 25.—Push buttons:

Chas. Cory & Son*	1,207.41
Western Electric Co	1,288.70

Class 26.—Tubing:

Francis Harral*	151.38
Western Electric Co	246.00
Manhattan Supply Co.	419.35

Class 27.—Brass tubing:

James Reilly Repair and Supply Co.	200.29
Manhattan Supply Co.	199.10
Morse Burtis*	188.49

Class 28.—Flexible conduit, etc.:

Western Electric Co.*	79.10
Manhattan Supply Co.	97.30

Class 29.—Rotary transformer.†

Class 30.—Screws, etc.:

Francis Harral*	38.83
Barber & Ross	42.88
James Reilly Repair and Supply Co.	41.54
Manhattan Supply Co.	66.42

Class 31.—Electrical supplies:

Western Electric Co.	47.00
James Reilly Repair and Supply Co.	49.50
Manhattan Supply Co.	54.00
Chas. A. Moore*	44.95

Class 32.—Poplar:

Watson & Pittinger	757.00
Chas. E. Pell*	679.00
Geo. L. Neville	950.00

Class 33.—White ash:

Watson & Pittinger	987.00
Chas. E. Pell*	942.00
Geo. L. Neville	1,080.00

Class 34.—Yellow pine:

Watson & Pittinger*	308.00
Chas. E. Pell	305.88
Geo. L. Neville	1,000.00

Class 35.—Spruce:

Watson & Pittinger*	576.00
Chas. E. Pell	577.29

Class 36.—Locust butts:

Watson & Pittinger	75.00
Chas. E. Pell*	60.00

Class 37.—Sugar:

Wm. G. Ahrens	5,240.00
C. J. Caughey*	5,000.00
Thos. Kelly	5,167.00
John J. O'Rorke	5,088.60

* Accepted.

† No award.

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated January 25, 1896; opened February 11, 1896.

Class 1.—Tar:	
J. W. Hunnewell	$405.00
S. C. Forsaith Machine Co.*	305.70
Geo. L. Neville	376.87
M. F. Whiton & Co	472.50
Chas. H. Pleasants	427.50
Manhattan Supply Co	378.00
E. B. Thurber	382.50
Class 2.—Flax twine:	
General Equipment and Engineering Co	1,957.90
Class 2.—Flax twine—Continued.	
Geo. L. Neville	$2,205.00
John A. Driscoll	2,065.00
John H. Tissot, jr	1,995.00
Smith & Dove Manufacturing Co	2,030.00
Thomas Kelly*	1,819.30
Boston Thread and Twine Co	1,960.00
Manhattan Supply Co	1,854.00
E. B. Thurber	1,974.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated January 24, 1896; opened February 11, 1896.

Class 1.—Lumber:	
Thomas W. Smith	$515.90
Grayson & Cain*	492.65
W. T. Galliher & Bro	515.60
Nathan B. Gaskell	549.00
Class 2.—Hardware:	
Barber & Ross*	60.53
John H. Tissot, jr	80.48
Philadelphia Machinery and Supply Co	82.15
J. H. Chesley & Co	69.42
General Equipment and Engineering Co	65.17
Francis Harral	99.97
Class 3.—Tools:	
Barber & Ross	230.68
S. C. Forsaith Machine Co	211.09
F. P. May & Co	191.30
John H. Tissot, jr	261.13
Philadelphia Machinery and Supply Co	186.10
J. H. Chesley & Co	224.29
General Equipment and Engineering Co	211.37
Francis Harral	171.11
J. B. Kendall	221.79
Henry T. Chorley*	150.05
Class 4.—Files:	
Barber & Ross	190.26
Class 4.—Files—Continued.	
F. P. May	$182.56
John H. Tissot, jr	173.84
J. Barton Smith & Co	153.76
Philadelphia Machinery and Supply Co	172.82
General Equipment and Engineering Co	180.64
J. B. Kendall*	152.54
Henry F. Chorley	168.50
E. B. Thurber	193.72
Matthew Gill, jr	213.08
Class 5.—Waste:	
Barber & Ross	215.40
F. P. May & Co	225.00
Jas. Reilly Repair and Supply Co.*	198.75
Fiske Bros. Refining Co	201.00
Philadelphia Machinery and Supply Co	219.00
General Equipment and Engineering Co	203.70
J. B. Kendall	207.00
E. B. Thurber	204.00
John Early	207.00
Matthew Gill, jr	209.10
Class 6.—Steel forgings:	
Bethlehem Iron Co	654.00
Midvale Steel Co.*†	654.00

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated January 27, 1896; opened February 11, 1896.

Class 1.—Paints:	
Ira B. White	$896.60
James Langmuir	901.53
General Equipment and Engineering Co	822.57
Smith, Kline & French Co	930.26
Chas. M. Childs & Co	819.63
Chas. H. Pleasants	1,162.16
John Lucas*	817.36
E. B. Thurber	996.60
Class 2.—Graphite:	
Ira B. White	145.00
John H. Tissot, jr.*	55.00
James Langmuir	166.00
General Equipment and Engineering Co	134.90
Chas. M. Childs & Co	167.50
Geo. L. Neville	140.00
Fiske Bros. Refining Co	165.00
Chas. H. Pleasants	240.00
John Lucas	70.00
Manhattan Supply Co	164.00
E. B. Thurber	162.00
Class 3.—Concentrated lye:	
John H. Tissot, jr	150.00
James Langmuir	134.80
General Equipment and Engineering Co	99.60
Geo. L. Neville	159.00
Marx Dublon	125.00
Fiske Bros. Refining Co	152.00
Chas. H. Pleasants	150.00
Manhattan Supply Co	168.00
E. B. Thurber	152.50
Class 4.—White lead:	
Ira B. White	$2,547.50
James Langmuir	2,512.50
General Equipment and Engineering Co	2,520.00
Smith, Kline & French Co	2,447.50
John Lucas	2,462.50
Frank E. Clark*	2,329.84
R. P. Rowe	2,572.50
Class 5.—White zinc:	
Ira B. White	6,250.00
James Langmuir	5,789.70
General Equipment and Engineering Co	6,285.00
Smith, Kline & French Co	6,250.00
Chas. M. Childs & Co	7,000.00
John Lucas*	5,295.00
E. B. Thurber	5,970.00
Class 6.—Lubricating oil:	
Manhattan Oil Co	1,150.00
Fiske Bros. Refining Co	1,600.00
Maryland Oil Co	925.00
Swan & Finch Co.*	762.00
Class 7.—Linseed oil:	
Manhattan Oil Co	1,030.00
Smith, Kline & French Co	1,040.00
Fiske Bros. Refining Co	938.00
Chas. H. Pleasants	1,040.00
R. P. Rowe*	930.00
Class 8.—Turpentine:	
Chas. M. Childs & Co	2,500.00
Geo. L. Neville*	1,750.00
Fiske Bros. Refining Co	1,847.50
E. B. Thurber	2,100.00

* Accepted.

† Decided by lot.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 9.—Varnishes:	
Ira B. White*	$475.40
Union Supply Co	491.00
James Langmuir	497.00
Anglo-American Varnish Co	481.00
General Equipment and Engineering Co	660.00
Beckwith Chandler Co	(†)
Chas. M. Childs & Co	480.00
Geo. L. Neville	500.00
Chas. H. Pleasants	608.00
John Lucas	660.00
E. B. Thurber	509.00
Class 10.—Hammock and bag canvas:	
John H. Tissot, jr	3,352.50
G. K. Sheridan	3,642.00
Manhattan Supply Co	3,604.00
E. B. Thurber*	3,295.00
Fearing, Hall & Whiton	(†)
Class 11.—Cotton twine:	
General Equipment and Engineering Co	116.95
Geo. L. Neville	99.00
John A. Driscoll	81.00
Class 11.—Cotton twine—Continued.	
Manhattan Supply Co	$99.00
Thomas Kelly	81.00
Fearing, Hall & Whiton	(†)
E. B. Thurber*	79.88
Class 12.—Beeswax:	
S. C. Forsaith Machine Co.*	67.00
John H. Tissot, jr	76.00
General Equipment and Engineering Co	78.00
Fiske Bros. Refining Co	74.00
Chas. H. Pleasants	76.00
Thomas Kelly	68.00
E. B. Thurber	70 00
Mathew Gill, jr	98.00
Class 13.—Copper kettles:	
S. C. Forsaith Machine Co	298.00
General Equipment and Engineering Co.*	218.00
Bramhall, Deane & Co	245.00
Manhattan Supply Co	289.00
Class 14.—Ranges:	
Duparquet, Huot & Moneuse Co	250.00
Bramhall, Deane & Co.*	222.00

Schedule of proposals for supplies for the Mare Island Navy-Yard under Bureau advertisement dated January 20, 1896; opened February 18, 1896.

Class 1.—Beans:	
Thomas H. Dowling	$477.00
Herman Levi	484.20
S. W. Ehrman	585.00
Louis E. Lake	555.00
Erlinger & Gallinger	656.25
Pacific Marine Supply Co.*	467.00
Class 2.—Tomatoes:	
Thomas H. Dowling	335.00
Herman Levi*	310.00
S. W. Ehrman	450.00
Class 3.—Vinegar:	
Thomas H. Dowling	350.00
Herman Levi	195.00
Pacific Pickle and Vinegar Works	370.00
Class 4.—Sirup:	
Thomas H. Dowling	197.50
Herman Levi	160.00
Pacific Marine Supply Co	197.60
Class 5.—Pease:	
Thomas H. Dowling*	248.50
Herman Levi	255.00
Pacific Marine Supply Co	256.40
Class 6.—Rice:	
Herman Levi	308.00
S. W. Ehrman	328.00
Pacific Marine Supply Co	308.80
Class 7.—Dried apples:	
Herman Levi	$82.50
S. W. Ehrman	100.00
Castle Bros	108.00
Pacific Marine Supply Co.*	82.00
Class 8.—Dried peaches:	
Herman Levi*	82.05
S. W. Ehrman	135.00
Castle Bros	96.75
Pacific Marine Supply Co	89.55
Class 9.—Raisins:	
Herman Levi	36.80
S. W. Ehrman	65.00
Castle Bros	49.50
Pacific Marine Supply Co.*	35.00
Class 10.—Prunes:	
Herman Levi*	51.30
S. W. Ehrman	77.50
Castle Bros	59.50
Pacific Marine Supply Co	54.70
Class 11.—Sugar:	
Herman Levi	2,735.00
S. W. Ehrman	2,775.00
Pacific Marine Supply Co	2,820.00
Class 12.—Corn brooms:	
Louis E. Lake*	144.50
General Equipment and Engineering Co	187.00

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated February 8, 1896; opened February 25, 1896.

Class 1.—Prunes:	
C. J. Caughey	$400.00
Wm. G. Ahrens*	340.00
John J. O'Rorke	410.80
Class 2.—Raisins:	
E. F. Cuming	212.50
Manhattan Supply Co	309.50
C. J. Caughey*	200.00
Wm. G. Ahrens	225.50
John J. O'Rorke	212.50
Class 3.—Tinned vegetables:	
E. F. Cuming	2,319.80
C. J. Caughey	1,606.50
Wm. G. Ahrens	1,785.00
Sidney Thursby	1,575.00
John J. O'Rorke*	1,495.50
Class 4.—Roast beef:	
C. J. Caughey*	3,562.50
D. E. Boulton	3,815.00
Chas. F. Sullivan	5,125.00
Class 5.—Corned beef:	
C. J. Caughey*	$4,041.66
D. E. Boulton	4,265.00
Chas. F. Sullivan	5,125.00
Class 6.—Sewing silk:	
Thomas Kelly	1,208.38
Brainard & Armstrong Co.*	1,087.75
Wm. W. Foulkrod	1,285.00
Wm. H. Horstmann Co	1,437.50
Marc M. Michael	1,115.00
Chas. H. Keith	1,199.50
Hemingway & Bartlett Silk Co	1,208.33
John H. Ling	1,190.00
Class 7.—Mattresses:	
Henry B. Dougherty	5,199.80
Thomas Kelly	6,580.00
Jos. W. Moyer	5,395.00
Thomas M. Farley*	5,104.00
John Wanamaker	6,000.00
John H. Ling	6,300.00

* Accepted.

† Informal.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 8.—Watch caps:
- E. B. Thurber $7,400.00
- Thomas Kelly 5,920.00
- Manhattan Supply Co 6,538.00
- Wm. W. Foulkrod 5,714.00
- B. Y. Pippey & Co 7,200.00
- Wm. H. Horstmann Co 5,750.00
- Saml. Baron* 5,690.00

Class 9.—Salt-water soap:
- Manhattan Supply Co.* 6,380.00
- C. J. Caughey 7,250.00
- Chas. E. Gross 7,660.00
- Maross & Jenkens 16,375.00
- Adolph Mendell 6,498.80
- Frank V. Wireman 6,500.00
- John Wanamaker 8,440.00

Class 10.—Blankets:
- John H. Tissot, jr.* 9,150.00
- B. Y. Pippey 10,400.00

Class 11.—Woolen jerseys:
- E. B. Thurber 35,400.00
- John H. Tissot, jr 30,400.00
- Manhattan Supply Co 20,280.00
- Wm. W. Foulkrod 27,058.00
- B. Y. Pippey & Co 31,300.00
- Saml. Baron* 27,490.00

Class 12.—Candles:
- E. B. Thurber 1,494.00

Class 12.—Candles—Continued.
- Manhattan Oil Co.* $1,425.00
- S. C. Forsaith Machine Co 1,687 50
- John H. Tissot, jr 1,875.00
- Peter Comstock 1,500.00
- Manhattan Supply Co 1,483.00
- Warner Ellis 1,500.00
- Chas. H. Pleasants 1,762.50
- John J. O'Rorke 1,430.50

Class 13.—Fire grenades:
- E. B. Thurber 480.00
- S. C. Forsaith Machine Co.* 450.00
- John H. Tissot, jr 461.25
- Manhattan Supply Co 478.50
- Geo. L. Neville 457.50
- Chas. H. Pleasants 550.00

Class 14.—Suction hose:
- New Jersey Car Spring and Rubber Co.* 171.45
- James Reilly Repair and Supply Co 174.15
- Gutta Percha and Rubber Manufacturing Co 202.50

Class 15.—Rubber life belts:
- Manhattan Supply Co 3,690.00
- Columbia Rubber Works Co.* 2,500.00
- B. Y. Pippey & Co 3,725.00
- Hodgman Rubber Co 3,490.00

Schedule of proposals for coal for the United States Navy under Bureau advertisement dated February 17, 1896; opened March 3, 1896.

Class 1.—Bituminous coal:
- Geo. R. Dilkes & Co $4,375.00
- Clearfield Bituminous Coal Co ..... 5,125.00 / 4,375.00
- Peale, Peacock & Kerr ..... 4,330.00 / 4,975.00 / 4,850.00 / 5,475.00
- S. M. Hamilton & Co 4,250.00
- Davis Coal and Coke Co 4,550.00
- A. C. Danner 5,875.00

Class 1.—Bituminous coal—Continued.
- T. Bennett Phillips ..... $4,425.00 / 5,425.00
- C. B. Orcutt ..... 4,875.00 / 5,625.00
- E. B. Townsend 5,375.00
- Wm. Lamb & Co 5,000.00
- Gulf Transit Co 5,000.00
- Wm. L. Read 5,375.00
- Merchant Coal Co 5,125.00
- George W. Taylor & Co 5,625.00

Schedule of supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated February 15, 1896; opened March 3, 1896.

Class 1.—Bolts, nuts, etc.:
- Geo. L. Neville $148.30
- J. B. Kendall 157.14
- James Reilly Repair and Supply Co. 139.01
- Ira B. White 150.05
- J. H. Sternbergh 161.82
- Mayer & Co.* 138.35
- General Equipment and Engineering Co 144.34
- Barber & Ross 154.43
- Porter McNeal Co 149.18

Class 2.—Cotton canvas:
- Geo. L. Neville 1,987.50
- John H. Tissot, jr.† 1,246.38
- Mt. Vernon Co.* 1,286.10
- Mayer & Co 1,691.60

Class 3.—Hardware:
- Geo. L. Neville 240.07
- Anderson & Ireland 288.00
- John H. Tissot, jr 269.40
- Cook, Clark & Co 295.95
- Manhattan Supply Co 256.56
- James Reilly Repair and Supply Co. 243.13
- Francis Harral 242.17
- J. H. Chesley & Co 256.90
- Ira B. White 250.15
- Brooklyn Hardware and Sporting Goods Co 235.28
- Mayer & Co.* 229.02
- General Equipment and Engineering Co 253.59
- Barber & Ross 255.52
- Porter McNeal Co 263.52

Class 4.—Lanterns, etc.:
- E. Hazard Aikman 153.60
- Geo. L. Neville 136.50

Class 4.—Lanterns, etc.—Continued.
- Ira B. White $133.20
- Wm. Porter's Sons 158.34
- Ericsson & Hall* 124.50
- Porter's Sons & Co 142.80

Class 5.—White pine:
- Geo. L. Neville 4,575.00
- N. B. Gaskill 4,650.00
- Duke & Smith* 4,485.00

Class 6.—Spruce:
- N. B. Gaskill* 234.00
- Duke & Smith 360.00

Class 7.—Yellow pine:
- Geo. L. Neville 1,600.00
- N. B. Gaskill 1,560.00
- Duke & Smith* 1,467.00

Class 8.—White ash:
- Geo. L. Neville 3,275.00
- J. Davis Reed 2,151.00
- Duke & Smith* 2,082.50

Class 9.—White oak:
- Geo. L. Neville 500.00
- J. Davis Reed 250.00
- N. B. Gaskill 295.00
- Duke & Smith* 200.00

Class 10.—Tobin bronze:
- Geo. L. Neville 1,048.43
- Ansonia Brass and Copper Co.* 990.71
- Ira B. White 1,154.40
- Mayer & Co 1,038.96
- General Equipment and Engineering Co 1,016.88

Class 11.—Steel:
- Geo. L. Neville 475.76
- Park Bros. & Co ..... (‡)
- J. B. Kendall 404.58

* Accepted.

† Informal.

Schedule of supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 11.—Steel—Continued.	
H. H. Furgerson Davie	$496.64
Ira B. White*	502.65
Mayer & Co	793.29
General Equipment and Engineering Co.*	380.35
Class 12.—Packing:	
Geo. L. Neville	672.50
John H. Tissot, jr	726.50
Manhattan Supply Co	728.00
James Reilly Repair and Supply Co.	660.50
Francis Harral	662.50
Ira B. White	714.00
Boston Woven Hose and Rubber Co.	714.00
Mayer & Co	820.00
General Equipment and Engineering Co.*	638.41
Class 13.—Acids and paints:	
Geo. L. Neville	110.50
Manhattan Supply Co	117.60
Ira B. White	108.00
General Equipment and Engineering Co.*	90.96
Chas. H. Pleasants	91.36
Class 14.—Pitch:	
Geo. L. Neville	67.50
Ira B. White	63.70
Chas. H. Pleasants	77.50
Class 15.—Files:	
Geo. L. Neville	622.41
Henderson & Ireland	(†)
Manhattan Supply Co	679.58
J. B. Kendall*	537.13
Ira B. White	553.54
Class 15.—Files—Continued.	
J. Barton Smith Co	$539.60
Brooklyn Hardware and Sporting Goods Co	590.56
Mayer & Co	632.25
General Equipment and Engineering Co	619.55
Barber & Ross	683.63
Class 16.—Tools:	
Geo. L. Neville*	90.56
Anderson & Ireland	(†)
John H. Tissot, jr	109.04
Manhattan Supply Co	100.24
Francis Harral	106.30
Ira B. White	101.50
Mayer & Co	144.50
General Equipment and Engineering Co	126.42
Porter McNeal Co	104.50
Class 17.—Leather and belting:	
Geo. L. Neville	542.00
Graton & Knight Manufacturing Co.†	375.00
Loeb Bros	470.25
Manhattan Supply Co	624.00
National Leather Belting Co.*	455.00
E. V. White & Co	660.00
Ira B. White	579.50
Brooklyn Hardware and Sporting Goods Co	498.00
Fayerweather & Ladew	468.00
Mayer & Co	594.00
Barber & Ross	557.13
Porter McNeal Co	597.00

Schedule of proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated February 29, 1896; opened March 17, 1896.

Class 1.—Galvanized steel wire:	
Manhattan Supply Co.*	$636.00
Washburn & Moen Manufacturing Co	654.00
Class 2.—Bar shearing machine:	
Walter L. Clark*	$1,230.00
S. C. Forsaith Machine Co	1,865.00
Hilles & Jones Co	1,800.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., and the naval proving ground, Indian Head, Md., under Bureau advertisement dated February 26, 1896; opened March 17, 1896.

Class 1.—Bituminous coal:	
John Miller	$5,900.00
The Allegheny Co.*	4,960.00
Wm. L. Read	5,170.00
Class 2.—Anthracite coal:	
John Miller	350.00
Wm. L. Read*	275.00
Chas. Werner	287.00
Class 3.—Terra cotta pipe:‡	
Geo. L. Neville	866.00
Class 4.—Virginia pine:	
Geo. L. Neville	620.88
Nathan B. Gaskill	693.92
Church & Stephenson*§	330.71
Riley & Walker	339.71
Grayson & Cain	423.50
W. T. Galliher & Bro	443.10
Class 5.—Pipe and fittings:	
Pancoast & Rogers	964.19
Class 5.—Pipe and fittings—Continued.	
Morse Burtis*	$932.15
Geo. L. Neville	1,833.08
General Equipment and Engineering Co	978.61
Frank H. Woodruff	1,050.34
Chas. Miller & Son	1,071.54
Mitchell & Read	1,069.92
Barber & Ross	1,115.96
Class 6.—Anthracite coal:	
John Miller*	677.00
Wm. L. Read	729.10
Chas. Werner	760.06
Class 7.—Bituminous coal:	
John Miller	157.50
Wm. L. Read*	140.00
Chas. Werner	159.95

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated February 27, 1896, opened March 17, 1896.

Class 1.—Brushes and brooms:	
Manhattan Supply Co	$376.49
Brooklyn Hardware and Sporting Goods Co	433.40
James Reilly Repair and Supply Co.	357.17
John Early	350.35
John H. Tissot jr.*	349.54
E. B. Thurber	418.85
Class 2.—Lacing Leather:	
Manhattan Supply Co	76.50
Loeb Bros	67.50
Class 2.—Lacing leather—Continued.	
H. A. Rogers	$63.00
Brooklyn Hardware and Sporting Goods Co	78.75
James Reilly Repair and Supply Co.*	60.30
General Equipment and Engineering Co	69.61
E. B. Thurber	76.50
Geo. L. Neville	90.00
S. C. Forsaith Machine Co	64.35

* Accepted. † Informal. ‡ No award. § Decided by lot.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 3.—White pine:	
Chas. E. Pell	$1,750.00
Watson & Pettinger	1,697.50
Geo. L. Neville	2,250.00
Class 4.—Paints:	
Chas. M. Childs & Co	639.67
General Equipment and Engineering Co	544.34
Frank H. Woodruff	512.00
James Langmuir *	494.78
Geo. L. Neville	642.48
Ira B. White	563.46
John Lucas & Co	592.10
Class 5.—Brown zinc:	
Chas. M. Childs & Co	218.75
General Equipment and Engineering Co	237.00
Frank H. Woodruff	280.00
Smith, Kline & French Co	225.00
E. B. Thurber *	200.00
James Langmuir	212.00
Geo. L. Neville	250.00
Ira B. White	241.00
S. C. Forsaith Machine Co	300.00
John Lucas & Co	225.00
Class 6.—Varnish:	
Queens County Varnish Co	275.00
Chas. M. Childs & Co. *	250.60
Anglo-American Varnish Co	305.00
General Equipment and Engineering Co	365.00
Frank H. Woodruff	390.00
E. B. Thurber	320.00
James Langmuir	340.00
Geo. L. Neville	295.00
Geo. W. Betts	265.60
Murphy Varnish Co	365.00
Ira B. White	268.50
John Lucas Co	335.00
Class 7.—Tools:	
Manhattan Supply Co	843.40
John H. Tissot, jr. *	566.13
Brooklyn Hardware and Sporting Goods Co	724.32
James Reilly Repair and Supply Co.	617.84
Francis Harral	623.13
John H. Tissot, jr	716.03
Class 7.—Tools—Continued.	
E. B. Thurber	$756.30
Ira B. White	642.42
Class 8.—Cotton waste:	
James Reilly Repair and Supply Co.	1,230.00
Robt Bishop Manufacturing Co. *	1,196.00
General Equipment and Engineering Co	1,272.00
E. B. Thurber	1,300.00
Geo. L. Neville	2,000.00
Fiske Bros. Refining Co	1,282.00
Ira B. White	1,428.00
S. C. Forsaith Machine Co	1,420.00
Class 9.—Fire hose:	
Revere Rubber Co	1,890.00
New Jersey Car Spring and Rubber Co. *	1,770.00
Francis Harral	1,899.00
Boston Woven Hose and Rubber Co.	1,950.00
Gutta Percha and Rubber Manufacturing Co	(†)
Eureka Fire Hose Co	1,942.50
Class 10.—Spruce piles:	
Chas. E. Pell	1,200.00
Watson & Pittinger	1,280.00
E. B. Thurber *	950.00
Class 11.—Yellow pine:	
Chas. E. Pell	951.20
Watson & Pittinger	1,019.25
Geo. L. Neville *	915.40
Class 12.—Oak fender piles:	
Chas. E. Pell	228.00
Watson & Pittinger	240.00
E. B. Thurber *	135.00
Geo. L. Neville	300.00
Class 13.—Portland cement:	
Cyril Francklyn	575.00
Manhattan Supply Co	557.50
Hiram Snyder & Co	522.50
E. B. Thurber	600.00
Geo. L. Neville	587.50
Robt. S. Sinclair	585.00
Atlas Cement Co. *	507.50
Class 14.—Broken stone:	
Cyril Francklyn *	194.00
Geo. L. Neville	250.00

Schedule of proposals for 150,000 pounds of Navy tobacco for the New York Navy-Yard under Bureau advertisement dated February 21, 1896; opened March 31, 1896.

Class 1.—Navy tobacco: ‡	
Chas. P. Buchanan	$0.25½ / .26
United States Tobacco Co	.27
J. B. Pace Tobacco Co	.32
P. H. Mayo & Bro	.33
Butler & Bosher	.33 / .28½ / * .27½ / .27
Class 1.—Navy tobacco—Continued.	
Bland Bros. & Wright	$0.23½ / .24½
W. T. Hancock	.25½
F. J. Dessoir	.24 11/16
P. Lorillard & Co	.29½
S. W. Venable Tobacco Co	.26½ / .28½ / .31
C. J. Caughey	.28 11/16

Schedule of supplies for the Naval Observatory, Washington, D. C., under Bureau advertisement dated February 25, 1896; opened March 31, 1896.

Class 1.—High grade sextants: §	
Keuffel & Esser	$4,297.50
Class 2.—Spyglasses: §	
Henry Lorsch	2,000.00
T. L. & J. B. Negus	2,125.00
John Wanamaker	1,646.00
Class 3.—Spyglasses:	
Henry Lorsch	1,400.00
T. L. & J. B. Negus	1,500.00
Class 3.—Spyglasses—Continued.	
John Wanamaker *	$1,106.25
Class 4.—Binocular glasses:	
Henry Lorsch *	2,400.00
Spencer Optical Manufacturing Co.	3,100.00
Joseph O. Stokes	3,148.00
T. L. & J. B. Negus	2,500.00
John Wanamaker	2,674.00

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated March 13, 1896; opened March 31, 1896.

Class 1.—Brass lamps:	
Ira B. White	$50.88
Geo. L. Neville	48.00
Hitchcock Lamp Co	345.60
Wm. Porter's Sons	57.60
Class 1.—Brass lamps—Continued.	
S. W. Niemeyer	$64.56
Porter's Sons & Co	65.40
Manhattan Supply Co	50.40
Frank H. Woodruff *	39.00

* Accepted. † Informal. ‡ Per pound. § No a.vard.

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 2.—Bar iron:	
N. B. Handy & Co.*	$315.50
Lebanon Chain Works	332.00
Ira B. White	364.00
James Reilly Repair and Supply Co.	410 75
Geo. L. Neville	332.50
General Equipment and Engineering Co	361 00
Brown & Co	354.25
Pancoast & Rogers	377.00
J. H. Sternbergh	340.50
Frank H. Woodruff	405.00
E. L. Mayer & Co	463.75
J. B. Kendall	367.53
Class 3.—Metals:	
S. C. Forsaith Machine Co	$2,106.25
James Clendenin*	2,017.00
Geo. L. Neville	2,225.00
Nathan Trotter & Co	2,262.50
E. L. Mayer & Co	2,300.00
Class 4.—Anchors:	
James Reilly Repair and Supply Co.	2,860.00
Geo. L. Neville	13,200.00
American Steel Casting Co	2,508.00
Bethlehem Iron Co	4,290.00
Penn Steel Casting and Machine Co.	3,916.00
Midvale Steel Co.*	2,164.80

Schedule of proposals for supplies for the naval station, Newport, R. I., under Bureau advertisement dated March 11, 1896; opened March 31, 1896.

Class 1.—Brass rod:	
Thomas Kelly	$4,990.32
Geo. L. Neville	4,454.30
James Reilly Repair and Supply Co.	4,321.47
Merchant & Co	4,345.73
Ansonia Brass and Copper Co	4,345.73
A. P. Swayer & Co	4,315.73
Class 1—Brass rod—Continued.	
Ericsson & Hall	(‡)
Brooklyn Hardware and Sporting Goods Co	$4,345.74
Manhattan Supply Co	4,345.73
Chas. A. Moore*	4,279.89

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated March 12, 1896; opened March 31, 1896.

Class 1.—Salt beef:	
Joseph C. Cooper*	$2,850.00
C. J. Caughey	2,945.00
Halstead & Co	3,140.00
Thomas C. Dougherty	2,945.00
Eastmans Co	4,375.00
Class 2.—Evaporated peaches:	
John J. O'Rorke*	338.50
Wm. G. Ahrens	397.50
C. J. Caughey	468.75
E. F. Cuming	463.50
Class 3.—Pease.‡	
John J. O'Rorke	309.40
Wm. G. Ahrens	430.00
E. F. Cuming	396.00
Class 4.—Sausage meat:	
C. J. Caughey	2,901.00
Chas. F. Sullivan	2,069.00
Eastmans Co.*	2,850.00
Class 5.—Sirup:	
John J. O'Rorke	762.80
Wm. G. Ahrens*	709.60
C. J. Caughey	860.00
E. F. Cuming	880.00
Class 6.—Vinegar:	
John J. O'Rorke	458.50
Wm. G. Ahrens	525.00
H. J. Heinz Co	600.00
F. Foehrenbach Co.*	395.00
Class 7.—Pickles:	
H. J. Heinz Co	1,375.00
F. Foehrenbach*	1,223.68
Class 8.—Cup bowls and plates:	
John H. Tissot, jr	2,382.50
Chas. L. Phipps	2,245.00
Cavanagh Bros.* §	2,470.00
Manhattan Supply Co	2,350.00
James K. Shaw	2,462.50
Class 9.—Mess kettles:	
Enterprise Brush Co.*	202.50
Manhattan Supply Co	217.50
Class 10.—Forks:	
John Wanamaker*	416.67
John H. Tissot, jr	445.50
Manhattan Supply Co	424.50
Wilcox Silver Plate Co	417.50
Class 11.—Spoons:	
John Wanamaker*	416.67
John H. Tissot, jr	445.50
Manhattan Supply Co	424.50
Wilcox Silver Plate Co	417.50
Class 12.—Scrub brushes:	
Enterprise Brush Co.*	$663.50
Manhattan Supply Co	1,100.00
Jacob Voelbel	667.50
Edward E. Eames	775.00
Class 13.—Blacking brushes:	
Enterprise Brush Co	1,721.00
Cavanagh Bros	1,594.00
Manhattan Supply Co	2,140.00
Jacob Voelbel* §	1,649.00
Edward E. Eames	1,950.00
Class 14.—Overcoat cloth:	
Sullivan, Vail & Co.*	9,936.00
Manhattan Supply Co	11,150.00
Conshohocken Woolen Co	11,000.00
B. Y. Pippey & Co	11,000.00
Class 15.—Trousers cloth:	
Sullivan, Vail & Co	21,702.00
Manhattan Supply Co	24,150.00
Conshohocken Woolen Co.*	21,000.00
B. Y. Pippey & Co	21,637.50
Class 16.—Cap cloth:	
Wendell, Fay & Co	19,602.00
Sullivan, Vail & Co	19,491.00
Manhattan Supply Co	21,900.00
Conshohocken Woolen Co.*	18,075.00
B. Y. Pippey & Co	18,397.50
Class 17.—Rubber buttons:	
Wm. W. Foulkrod	260.20
John H. Tissot, jr.*	254.80
Wm. H. Horstmann Co	267.70
India Rubber Comb Co	262.75
Manhattan Supply Co	264.16
Thomas Kelly	260.50
Class 18.—Ivory buttons:	
Wm. W. Foulkrod*	149.24
John H. Tissot, jr	153.28
Wm. H. Horstmann Co	151.68
Manhattan Supply Co	168.16
Thomas Kelly	150.96
Class 19.—Linen tape:	
Wm. H. Horstmann Co	300.00
Class 20.—Twill, etc.:	
John H. Tissot, jr	667.00
Union Supply Co	660.50
Manhattan Supply Co	635.00
Thomas Kelly*	611 60
Class 21.—Grommets:	
Wm. H. Horstmann Co	170.00
Trisdorfer & Co	180.00

*Accepted. †Informal. ‡No award. §Awarded by sample.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 21.—Grommets—Continued.	
Manhattan Supply Co.*	$156.00
E. Mattes & Son	160.00
Class 22.—Spool cotton:	
John H. Tissot, jr.	314.50
Marc M. Michael	309.37
Manhattan Supply Co	299.50
Thomas Kelly*	277.42
Edward E. Eames	(†)
Class 23.—Sewing silk:	
Wm. H. Horstmann Co	373.00
Marc M. Michael*	311.64
Percy C. Eggleston	317.18
Thomas Kelly	345.00
Hemingway & Bartlett Silk Co	320.37
A. J. Merselis	345.50
Class 24.—Anchors:	
Midvale Steel Co.*	3,936.00
Bethlehem Iron Co	7,890.00
Penn Steel Casting and Machine Co.	7,120.00
American Steel Casting Co	4,560.00
Class 25.—Glassware:	
James K. Shaw*	405.00
Class 26.—Glassware:	
James K. Shaw*	$357.90
Class 27.—Glassware:	
James K. Shaw*	67.52
Class 28.—Glassware:	
James K. Shaw*	65.57
Class 29.—China ware:	
James K. Shaw*	649.68
Class 30.—China ware:	
James K. Shaw*	108.28
Class 31.—China ware:	
Royal Copenhagen Porcelain Co.*	539.52
Class 32.—China ware:	
Royal Copenhagen Porcelain Co.*	94.35
Class 33.—Silver-plated ware:	
Wilcox Silver Plate Co.*	1,949.28
Class 34.—Silver-plated ware:	
Wilcox Silver Plate Co.*	1,454.40
Class 35.—Silver-plated ware:	
Wilcox Silver Plate Co.*	324.68
Class 36.—Silver-plated ware:	
Wilcox Silver Plate Co.*	254.62

Schedule of proposals for supplies for the Boston Navy-Yard under Bureau advertisement dated March 23, 1896; opened April 7, 1896.

Class 1.—Gas coke:	
E. B. Townsend*	$1,372.00
Class 2.—Galvanized steel wire:	
Trenton Iron Works*	1,323.75
Manhattan Supply Co	1,342.00

Schedule of proposals for supplies for the navy-yard, Portsmouth, N. H., under Bureau advertisement dated March 21, 1896; opened April 7, 1896.

Class 1.—Hardware:	
Francis Harral	$179.21
James Reilly Repair and Supply Co.*	159.57
General Equipment and Engineering Co	267.72
Rider & Cotton	231.17
Class 2.—Oars:	
Rider & Cotton	121.00
S. C. Forsaith Machine Co.*	129.94
Class 3.—Sole leather:	
Max Frank*	39.60
General Equipment and Engineering Co	49.50
Rider & Cotton	66.00
Abraham Westhimer	46.20
S. C. Forsaith Machine Co	43.72
Class 4.—Lumber.‡	
Class 5.—Iron:	
Bacon & Co	$396.52
Rider & Cotton*	391.95
Brown & Co	(†)
Class 6.—Iron:	
Bacon & Co	536.13
Rider & Cotton*	530.77
Brown & Co	(†)
Class 7.—Iron:	
Bacon & Co	292.69
Rider & Cotton*	288.18
Brown & Co	(†)
Class 8.—Lumber:	
Geo. McQuiston & Co	2,238.00
Charles A. Wendell*	2,215.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., and the naval proving ground, Indian Head, Md., under Bureau advertisement dated March 27, 1896; opened April 14, 1896.

Class 1.—Ingot copper:	
Jesse Lewisohn*	$5,325.00
Geo. L. Neville	6,000.00
S. C. Forsaith Machine Co	5,495.00
J. B. Kendall	5,450.00
James Clendenin	5,405.00
American Metal Co	5,335.00
Class 2.—Brass rod:	
Geo. L. Neville	2,712.60
S. C. Forsaith Machine Co	2,712.60
Waterbury Brass Co	2,603.23
Manhattan Supply Co	2,604.66
Thomas Kelly	2,943.50
J. B. Kendall	2,577.27
James Reilly Repair and Supply Co.	2,510.15
Merchant & Co	2,604.44
Chas. A. Moore	2,572.42
James Clendenin	2,699.67
Brooklyn Hardware and Sporting Goods Co	2,576.97
Ericsson & Hall*	2,505.01
Class 3.—Slab zinc:	
Jesse Lewisohn	445.00
Geo. L. Neville	900.00
S. C. Forsaith Machine Co	450.00
J. B. Kendall	445.00
James Clendenin*	424.00
Class 4.—Files:	
F. P. May & Co	589.28
Class 4.—Files—Continued.	
Geo. T. Montgomery	$695.81
J. B. Kendall	619.57
Chas. A. Moore	560.60
J. Barton Smith & Co.*	515.66
Class 5.—Screws:	
F. P. May & Co	90.12
J. H. Chesley & Co	94.21
James Reilly Repair and Supply Co.	93.97
Francis Harral	93.00
Brooklyn Hardware and Sporting Goods Co.*	83.19
Class 6.—White pine:	
Philip Walsh & Sons	690.30
Grayson & Cain	729.00
Geo. A. Sheehan	750.00
Geo. L. Neville	890.60
Thomas W. Smith*	680.00
Duke & Smith	800.00
Church & Stephenson	832.00
Class 7.—Georgia pine:	
Philip Walsh & Sons	1,259.04
Grayson & Cain	1,302.96
Geo. A. Sheehan*	1,232.88
Geo. L. Neville	1,099.18
S. C. Forsaith Machine Co	1,428.27
Thomas W. Smith	1,402.46
Duke & Smith	2,045.28
Church & Stephenson	1,247.58

*Accepted. †Informal. ‡No award.

Schedule of proposals for the Mare Island Navy-Yard, under Bureau advertisement dated March 10, 1896; opened April 14, 1896.

Class 1.—Salt water soap:	
Pioneer Soap Co	$3,490.00
Otto Luhn & Co.*	3,340.00
Thomas R Hayes	4,240.00
Hildebrant, Posner & Co	4,100.00
Herman Levi	3,349.90
Class 2.—Butter:	
Simpson, McIntire & Co	2,747.00
James F. Oyster	2,612.00
Herman Levi*	2,230.00
Norton, Teller & Roden	2,240.00
Class 3.—Pickles:	
Pacific Pickle and Vinegar Works.	280.80
Thomas H. Dowling	285.00
Herman Levi*	273.00
Class 4.—Salt beef:	
W. D. Bennett	1,445.00
Roth, Blum & Co.*	1,407.50
Henry Mohr	1,600.00
Class 5.—Tea:	
A. Schilling & Co*	750.00
Jones & Co	975.00
Class 5.—Tea—Continued.	
M. J. Brandenstein & Co	$825.00
Thomas H. Dowling	925.00
Herman Levi	824.50
Class 6.—Corned beef:	
W. D. Bennett	925.00
Herman Levi	862.00
Cudahy Packing Co.*	833.33
Libby, McNeal & Libby	1,025.00
Class 7.—Vegetables:	
Herman Levi*	474.00
Class 8.—Mutton:	
Herman Levi*	733.00
Class 9.—Roast beef:	
W. D. Bennett	1,650.00
Herman Levi*	1,384.00
Cudahy Packing Co	1,066.66
Libby, McNeal & Libby	1,666.00
Class 10.—Anchors:	
Midvale Steel Co.*	2,543.20
Bethlehem Iron Co	4,200.00
American Steel Casting Co	2,948.00

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated April 10, 1896; opened April 28, 1896.

Class 1.—Bolts, nuts, etc.:	
Geo. L. Neville	$155.00
J. B. Kendall*	118.20
F. P. May & Co	155.75
James Reilly Repair and Supply Co.	213.50
Barber & Ross	170.97
J. H. Sternbergh	157.63
Class 2.—Belting, etc.:	
Chas. A. Moore	656.40
Geo. L. Neville	615.08
Wm. Bowles	1,372.00
Leo Loeb	634.25
James Reilly Repair and Supply Co.	661.50
Geo. T. Montgomery	640.50
Barber & Ross	746.29
Cuyler & Mohler	855.00
Acme Belting Co	770.00
Graton & Knight Manufacturing Co.*	512.00
Frank W. McNeal	682.02
National Leather Belting Co	613.00
Class 3.—Tools:	
Chas. A. Moore	289.05
F. P. May & Co	312.96
James Reilly Repair and Supply Co.	274.75
Geo. T. Montgomery*	268.70
Barber & Ross	306.53
S. C. Forsaith Machine Co	329.03
Class 4.—Candles:	
Standard Oil Co.*	34.00
James Reilly Repair and Supply Co.	36.00
Chas Becker	50.00
Class 5.—Steel:	
Chas. A. Moore	157.26
J. B. Kendall*	132.18
Midvale Steel Co	265.00
Class 6.—Ingot copper:	
Geo. L. Neville	2,216.28
Jesse Lewisohn*	2,046.68
Class 6.—Ingot copper—Continued.	
James Clendenin	$2,060.17
J. B. Kendall	2,002.10
S. C. Forsaith Machine Co	2,210.50
Class 7.—Tin:	
Geo. L. Neville	328.50
Jesse Lewisohn	298.94
James Clendenin	302.65
J. B. Kendall	304.41
S. C. Forsaith Machine Co	326.31
Class 8.—Paraffin oil:	
Geo. L. Neville	290.00
Wm. Bowles	195.75
Standard Oil Co.*	123.11
Chas. Becker	152.25
Class 9.—Bolt oil:	
Wm. Bowles*	85.00
Standard Oil Co	119.50
Chas. Becker	220.00
Class 10.—Soft steel:	
Chas. A. Moore*	454.79
Geo. L. Neville	460.45
J. B. Kendall	474.88
Midvale Steel Co	952.00
Class 11.—Iron:	
Chas. A. Moore	86.90
Geo. L. Neville*	68.55
J. B. Kendal	67.40
A. P. Swoyer & Co	84.27
Class 12.—Machinery steel:	
Chas. A. Moore*	562.21
J. B. Kendall	563.66
Midvale Steel Co	1,114.21
Class 13.—Forgings:	
J. B. Kendall	57.09
Bethlehem Iron Co	93.60
Midvale Steel Co	79.56

Schedule of proposals for supplies for the navy-yard, Portsmouth, N. H., under Bureau advertisement dated April 11, 1896; opened April 28, 1896.

Class 1.—Lumber:	
Geo. L. Neville	$4,661.00
Class 1.—Lumber—Continued.	
Electric Fire Proofing Co*	$3,373.98

Schedule of proposals for table linen for the New York Navy-Yard under Bureau advertisement dated March 28, 1896; opened May 5, 1896.

Class 1.—Tablecloths:	
James McCutcheon	$2,162.70
Marshall Field	1,708.36
Manhattan Supply Co	2,342.00
James Girdwood*	1,649.10
John Wanamaker	2,126.10
Thomas Kelly	1,712.41
Henry Offerman	2,821.07
Jacques Krakauer	2,688.75
Class 2.—Tablecloths:	
James McCutcheon	$4,088.90
Marshall Field	4,287.44
Manhattan Supply Co	5,563.40
James Girdwood*	3,755.16
John Wanamaker	(†)
Thomas Kelly	4,729.29
Henry Offerman	6,782.12
Jacques Krakauer	5,215.50

*Accepted. †Informal.

Schedules of proposals for table linen for the New York Navy-Yard, etc.—Continued.

Class 3.—Tablecloths:	
James McCutcheon	$844.30
Marshall Field	875.69
Manhattan Supply Co.	938.55
James Girdwood *	716.30
Thomas Kelly	832.84
Henry Offerman	1,153.30
Jacques Krakauer	818.11
Class 4.—Napkins:	
James McCutcheon	1,898.00
Marshall Field	1,733.75
Manhattan Supply Co.	2,277.60
James Girdwood *	1,551.25
John Wanamaker	1,843.25
Thomas Kelly	(†)
Henry Offerman	4,343.50
Jacques Krakauer	1,642.50
Class 5.—Napkins.	
James McCutcheon	481.65
Marshall Field	524.88
Manhattan Supply Co.	676.78
Class 5.—Napkins—Continued.	
James Girdwood *	$463.13
John Wanamaker	(†)
Thomas Kelly	521.17
Henry Offerman	1,038.63
Jacques Krakauer	(†)
Class 6.—Doilies:	
James McCutcheon	226.05
Marshall Field	227.42
Manhattan Supply Co. *	172.62
Thomas Kelly	219.20
Henry Offerman	260.30
Class 7.—Glass towels:	
James McCutcheon *	644.30
Marshall Field	701.15
Manhattan Supply Co.	659.46
James Girdwood	(†)
John Wanamaker	682.20
Thomas Kelly	826.22
Henry Offerman	776.95

Schedule of proposals for supplies for the New York Navy-Yard under Bureau advertisement dated April 15, 1896; opened May 5, 1896.

Class 1.—Brushes:	
John H. Tissot, jr	$1,026.30
Francis Harral	1,034.26
Manhattan Supply Co.	1,093.72
John Early	1,010.62
Chas. Beissbarth *	912.04
Class 2.—Hardware:	
Brooklyn Hardware and Sporting Goods Co. *	492.26
John H. Tissot, jr	496.81
Francis Harral	533.45
Manhattan Supply Co.	502.10
Geo. L. Neville	537.00
Chas. A. Moore	520.88
Geo. T. Montgomery	619.30
Class 3.—Lamps:	
Wm. Porter's Sons	334.08
Porter's Son & Co. *	332.28
Geo. L. Neville	535.20
E. Hazard Aikman	361.80
Class 4.—Belting:	
National Leather Belting Co. *	479.25
Brooklyn Hardware and Sporting Goods Co.	502.00
S. C. Forsaith Machine Co.	636.70
Manhattan Supply Co.	652.70
Geo. L. Neville	629.00
Page Belting Co.	530.40
General Equipment and Engineering Co.	884.00
Leo Loeb	624.00
Chas. A. Moore	585.60
Class 5.—Leather:	
Brooklyn Hardware and Sporting Goods Co.	264.00
S. C. Forsaith Machine Co.	293.85
Manhattan Supply Co.	249.40
Ira B. White	254.40
Max Frank	245.60
Chas. A. Moore *	235.00
Class 6.—Lumber:	
Chas. E. Pell *	605.00
C. F. Hodsden & Co.	685.00
Watson & Pittinger	716.00
Class 7.—Lumber:	
Chas. E. Pell	2,405.00
Geo. L. Neville	3,520.00
Watson & Pittinger *	2,250.00
Class 8.—Lumber:	
Chas. E. Pell	820.00
W. R. Adams *	780.00
Watson & Pittinger	840.00
Class 9.—Lumber:	
Chas. E. Pell	623.00
Geo. L. Neville	960.00
W. R. Adams *	579.50
Watson & Pittinger	670.00
Class 10.—Paints:	
Smith, Kline & French Co.	$1,290.25
John Lucas & Co.	1,295.25
Shoemaker & Busch *	1,276.25
James Langmuir	1,283.50
Class 11.—Concentrated lye:	
Smith, Kline & French Co.	350.00
Manhattan Supply Co.	400.00
Fiske Bros. Refining Co.	322.50
Shoemaker & Busch	300.00
Geo. L. Neville	320.00
Marx Dublon	312.50
John J. O'Rorke *	269.50
General Equipment and Engineering Co.	292.50
Class 12.—Shellac:	
Smith, Kline & French Co.	145.00
Chas. M. Childs & Co.	145.00
Frank H. Woodruff	235.00
Ira B. White	190.00
Fiske Bros. Refining Co.	190.00
John Greig *	120.00
Shoemaker & Busch	275.00
James Langmuir	243.75
Class 13.—Varnishes and driers:	
Smith, Kline & French Co.	1,019.00
Chas. M. Childs & Co.	949.00
Frank H. Woodruff	1,280.00
Ira B. White	1,051.50
Union Supply Co.	880.00
Murphy Varnish Co.	1,295.00
John Lucas & Co.	1,094.00
Shoemaker & Busch	887.00
Geo. L. Neville	1,039.00
James Langmuir *	835.00
Class 14.—Lubricating oil:	
New York Lubricating Oil Co	937.50
Fiske Bros. Refining Co	1,650.00
Swan & Finch Co	897.50
Class 15.—Wrought-iron pipe:	
Morse Burtis	119.52
Frank H. Woodruff	123.23
S. C. Forsaith Machine Co.	111.16
Manhattan Supply Co.	137.98
Edward F. Keating *	107.94
A. P. Swoyer	113.84
General Equipment and Engineering Co.	216.16
Chas. A. Moore	116.72
Class 16.—Brass fittings and valves:	
Morse Burtis	309.12
Brooklyn Hardware and Sporting Goods Co.	301.74
Francis Harral	297.96
Frank H. Woodruff	319.71
S. C. Forsaith Machine Co.	305.60
Manhattan Supply Co.	449.70

* Accepted.

† Informal.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 16.—Brass fittings, etc.—Cont'd.	
Ira B. White	$280.80
Edward F. Keating	329.76
Chas. A. Moore	340.38
Geo. T. Montgomery *	272.88
Class 17.—Tools:	
Brooklyn Hardware and Sporting Goods Co	743.83
John H. Tissot, jr	738.37
Francis Harral *	676.18
Manhattan Supply Co	707.10
Geo. T. Montgomery	695.92
Class 18.—Files:	
Brooklyn Hardware and Sporting Goods Co.*	97.86
General Equipment and Engineering Co	119.70
Geo. T. Montgomery	127.60
Class 19.—Lumber:	
Chas. E. Pell *	375.00
Watson & Pittenger	400.00
Class 20.—Lumber:	
Chas. E. Pell	262.50
W. R. Adams *	231.25
Watson & Pittinger	280.00
Class 21.—Lumber:	
Chas. E. Pell	2,155.00
Watson & Pittinger	1,766.00
Class 22.—Kitchen utensils:	
Francis Harral *	258.36
Manhattan Supply Co	289.50
Bramhall, Deane & Co	302.28
Class 23.—Kitchen utensils:	
Francis Harral *	$364.98
Manhattan Supply Co	400.02
Bramhall, Deane & Co	405.60
Class 24.—Kitchen utensils:	
Francis Harral *	110.70
Manhattan Supply Co	121.80
Bramhall, Deane & Co	116.94
Class 25.—Kitchen utensils:	
Francis Harral *	44.25
Manhattan Supply Co	68.64
Bramhall, Deane & Co	61.20
Class 26.—Kitchen utensils:	
Francis Harral *	1,155.00
Manhattan Supply Co	1,335 00
Bramhall, Deane & Co	Informal.
Class 27.—Hardware:	
John H. Tissot, jr	143.40
Francis Harral *	101.44
Manhattan Supply Co	142.50
Class 28.—Scales:	
John H. Tissot, jr	207.00
Francis Harral *	139.00
Manhattan Supply Co	143.00
Class 29.—Lanterns:	
Manhattan Supply Co	106.40
Wm. Porter's Sons	102 90
Porter's Sons & Co	127.50
E. Hazard Aikman *	75.00

Schedule of proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated April 14, 1896; opened May 12, 1896.

Class 1.—Brushes:	
Francis Harral	$500.50
Miller, Sloss & Scott *	458.06
Class 2.—Sheet brass:	
Geo. T. Hawley	960.77
Geo. L. Neville	1,022.91
Manhattan Brass Co	1,025.31
Holbrook, Merrill & Stetson	1,022.84
Miller, Sloss & Scott	1,046.77
General Equipment and Engineering Co	1,046.02
Dunham, Carrigan & Hayden Co.*	849.85
Merchant & Co	1,022.91
Class 3.—Sheet tin, etc.:	
Holbrook, Merrill & Stetson	131.00
Miller, Sloss & Scott	170.13
General Equipment and Engineering Co	149.94
Merchant & Co *	126.00
Class 4.—Tools:	
Francis Harral	1,117.53
Geo. T. Hawley	1,166.89
Wakefield Baker *	1,109.45
Miller, Sloss & Scott	1,313.27
Class 5.—Soap:	
Otto Lahn *	$37.00
General Equipment and Engineering Co	61.00
Class 6.—Broken stone, etc.:	
A. S. Carman	210.80
J. H. Powell	216.70
William Walker *	205.50
Class 7.—Cement:	
A. S. Carman	673.40
J. H. Powell	673.40
Wm. Walker	663.00
Class 8.—Lumber:	
A. S. Carman *	162.44
J. H. Powell	196.26
Wm. Walker	164.98
Class 9.—Roofing tin:	
Holbrook, Merrill & Stetson *	93.75
Miller, Sloss & Scott	156.00
General Equipment and Engineering Co	107.10
Merchant & Co	105.00

Schedule of proposals for supplies for the naval hospital, Portsmouth, N. H., under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
Herman R. Paul *	$867.00
D. C. Norton	1,203.00
Clarence M. Prince	899.00
W. H. Belford	1,199.00
Class 2.—Groceries:	
Herman R. Paul *	704.83
D. C. Norton	891.21
Clarence M. Prince	718.73
Class 3.—Butter, etc.:	
Augustus Stevenson	432.00
Herman R. Paul	370.00
D. C. Norton	373.75
Clarence M. Prince	376.00
A. Wesley Moulton *	341.00
W. H. Belford	404.00
Class 5.—Milk and cream:	
Augustus Stevenson	$208.00
Harry H. Cook	243.00
D. C. Norton	283.75
Hylon M. Walker	195.00
A. Wesley Moulton *	187.50
Geo. F. Hayes	340.00
W. H. Belford	370.00
Class 6.—Bread:	
Lutts Bros.*	231.25
W. H. Belford	350.00
Class 7.—Vegetables:	
Augustus Stevenson *	187.45
D. C. Norton	428.28
Clarence M. Prince	272.85
A. Wesley Moulton	243.93

* Accepted.

Schedule of proposals for supplies for the naval hospital, Chelsea, Mass., under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
Chas. A. Simonds*	$1,608.50
Adam B. Shafer	1,913.00
W. H. Belford	2,095.50
Class 2.—Groceries:	
John Mullett & Co	1,049.70
Chas. A. Simonds*	1,014.50
Class 3.—Butter, etc.:	
John Mullett & Co	807.50
Chas. A. Simonds*	734.00
W. H. Belford	840.00
Class 4.—Ice:	
Chas. A. Simonds*	429.00
W. H. Belford	770.00
Class 5.—Milk and cream:	
Chas. A. Simonds	126.75
Class 5.—Milk and cream—Continued.	
Alfred E. Jones*	$120.62
Class 6.—Bread:	
John Mullett & Co.*	325.00
Geo. A. Sanderson	400.00
Chas. A. Simonds	460.00
John C. Loud	375.00
W. H. Belford	425.00
Class 7.—Vegetables:	
Chas. A. Simonds*	274.00
Class 8.—Provender:	
John Mullett & Co	696.25
J. E. Lewis & Co.*	655.25
Chas. A. Simonds	661.25
W. H. Belford	721.00
John B. Daish	732.40

Schedule of proposals for supplies for the naval hospital, New York, under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
W. H. Belford	$4,700.50
W. H. Evans	3,786.50
P. J. Morrisson*	3,720.00
Frank Fiederlein	5,162.75
Block Bros	4,656.00
Wm. H. Cloonen	4,990.00
Marc Mayer & Co	3,757.50
Class 2.—Groceries:	
W. H. Belford	3,181.80
Andrew Koch*	2,476.10
Chas. L. Richardson	(†)
Class 3.—Butter, etc.:	
Wilkins & Co	1,415.00
W. H. Belford	1,535.00
Andrew Koch	1,347.50
P. J. Morrisson	1,360.00
Wm. A. Wright*	1,330.00
Class 4.—Ice:	
W. H. Belford	720.00
Andrew Koch	750.00
Class 4.—Ice—Continued.	
P. J. Morrisson	$945.00
Brooklyn Hygienic Ice Co.*	375.00
Class 5.—Cream and milk:	
W. H. Belford	1,220.00
Andrew Koch	993.00
Wm. A. Wright*	723.00
Anton Behlen	992.00
Class 6.—Bread:	
W. H. Belford	1,250.00
Andrew Koch*	675.00
Anton Behlen	725.00
Class 7.—Vegetables:	
Andrew Koch	544.50
P. J. Morrisson	542.75
Wm. H. Cloonen	855.50
Class 8.—Provender:	
W. H. Belford	840.50
Andrew Koch	763.45
Chas. L. Richardson	727.05
John B. Daish	809.30

Schedule of proposals for the naval hospital, Philadelphia, Pa., under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
W. H. Belford	$2,866.00
John Q. Strickland*	2,803.00
Chas. Heard	(†)
Class 2.—Groceries:	
Robert McKeown	1,666.15
W. H. Belford	1,745.90
E. J. Crippen & Co	2,089.25
Wm. Deering*	1,536.80
Chas. Heard	1,633.60
Class 3.—Butter, etc.:	
Robert McKeown	1,230.00
W. H. Belford*	1,200.00
Wilkins & Co.‡	1,175.00
Chas. Heard	1,224.00
Class 4.—Ice:	
W. H. Belford	900.00
Delaware Ice and Coal Co	450.00
Class 4.—Ice—Continued.	
Knickerbocker Ice Co.*§	$450.00
Class 5.—Cream and milk:	
W. H. Belford	1,070.00
Michael Dougherty*	608.00
Henry Dolfinger	695.00
Class 6.—Bread:	
Robert McKeown	600.00
W. H. Belford	416.40
Geo. Goeltz*	360.00
Edelheimer & Co	660.00
Class 7.—Vegetables:	
G. Freund	399.66
Robert McKeown	405.00
Class 8.—Provender:	
Wm. Brown*	175.00
W. H. Belford	201.15
John B. Daish	188.65

Schedule of proposals for supplies for the naval hospital and dispensary, Washington, D. C., under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
Ira W. Paine*	$1,480.40
F. P. Seibert	1,797.00
W. H. Belford	2,043.90
Class 2.—Groceries:	
Ira W. Paine	851.15
Browning & Middleton	832.35
J. C. Ergood & Co.*	816.14
W. H. Belford	1,071.80
Class 3.—Butter, etc.:	
Ira W. Paine*	$445.00
James F. Oyster	453.50
D. W. Oyster	536.80
W. H. Belford	636.40
Wilkins & Co.‡	430.75
Class 4.—Ice:	
Hygienic Ice Co*	150.00
W. H. Belford	420.00

*Accepted. †Informal. ‡Rejected. §Decided by lot

Schedule of proposals for supplies for the naval hospital and dispensary, Washington, D. C., etc.—Continued.

Class 5.—Cream and milk:	
Ira W. Paine	$370.00
Corbin Thompson	339.00
Chas. W. Bland *	333.00
Class 6.—Bread:	
Chas. Schneider	240.00
Ira W. Paine	240.00
C. E. Berger *	178.20
Havener Baking Co	240.00
W. H. Belford	360.00
Class 7.—Vegetables:	
Ira W. Paine *	$431.50
Class 8.—Provender:	
John B. Daish	157.90
W. H. Belford	211.85
Wm. Galt & Co *	134.35
Class 9.—Provender:	
W. H. Belford	379.60
Wm. Galt & Co *	256.45

Schedule of proposals for supplies for the naval hospital, Norfolk, Va., under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
John A. Codd	$4,275.00
Phillips & Woodward *	3,449.50
Wm. J. Codd	4,521.25
Class 2.—Groceries:	
J. T. Parker & Bro	1,723.50
Thomas J. Barlow	1,719.35
R. B. Dougherty	1,810.25
Class 3.—Butter, etc.:	
J. T. Parker & Bro	980.00
Thomas J. Barlow	1,250.00
Wilkins & Co	910.00
Class 4.—Ice:	
C. R. Robertson & Co.*	240.00
Chas. R. Nash	(†)
Wm. A. Maupin	(†)
Class 5.—Cream and milk:	
John A. Codd	$720.00
Robt. F. Rose *	625.00
Class 6.—Bread:	
J. D Cabler	600.00
F. Rieger *	373.50
Class 7.—Vegetables:	
J. T. Parker & Bro	630.55
Thomas J. Barlow*	572.90
Class 8.—Provender:	
Lindsay & Co	237.25
J. T. Parker & Bro	229.00
John B. Daish *	226.90
Thomas J. Barlow	245.00

Schedule of proposals for supplies for the naval hospital, Pensacola, Fla., under Bureau advertisement dated April 7, 1896; opened May 12, 1896.

Class 1.—Meats:	
Benjamin Dolphin *	$160.45
Class 2.—Groceries:	
Benjamin Dolphin *	288.85
Class 3.—Butter, etc.:	
F. Bauer *	98.60
Benjamin Dolphin	111.50
Class 4.—Ice:	
F. Bauer *	60.00
Benjamin Dolphin	75.00
Class 5.—Cream and milk:	
Benjamin Dolphin *	$35.00
Class 6.—Bread:	
Benjamin Dolphin *	30.00
Class 7.—Vegetables:	
Benjamin Dolphin *	45.50
Class 8.—Provender:	
John B. Daish *	70.00
F. Bauer	73.85
Benjamin Dolphin	76.50

Schedule of proposals for supplies for the naval hospital and M. and S. storehouse, Mare Island, Cal., under Bureau advertisement dated April 7, 1896; opened May 12, 1896

Class 1.—Meats:	
Hammond & Brod	$2,800.50
Miller & Wittman *	2,638.50
Saml. Brown	2,728.00
Mark Strauss	3,268.00
Class 2.—Groceries:	
Pacific Marine Supply Co	2,556.39
Wilson & Weniger	2,097.45
James Brownley	2,110.60
James Magarry & Co	2,474.05
Corcoran & Collins *	2,021.77
Class 3.—Butter, etc.:	
Pacific Marine Supply Co	1,302.50
F. B. Norton	1,485.50
Wilson & Weniger	1,600.00
James Brownley *	1,094.00
James Magarry & Co	1,402.00
B. Passalagua	1,148.00
Corcoran & Collins	1,238.00
Class 4.—Ice:	
Wilson & Weniger	300.00
Oliver Curtis Smith	247.50
Henry Connelly *	171.00
Class 5.—Cream and milk:	
Wilson & Weniger	391.00
James Brownley	357.50
Henry Connelly	(†)
Class 5.—Cream and milk—Continued.	
B. Passalagua	$390.00
Corcoran & Collins *	310.60
Class 6.—Bread:	
Joseph Boss *	575.00
Wm. Schoeming	800.00
Wilson & Weniger	900.00
James Smith	800.00
Class 7.—Vegetables:	
Wilson & Weniger	971.10
Miller & Wittman	650.50
B. Passalagua	670.25
Corcoran & Collins *	625.00
Class 8.—Provender:	
Robert Gore *	770.10
Wilson & Weniger	1,505.60
James Brownley	870.75
Miller & Wittman	1,034.25
Louis E. Lake	938.75
Corcoran & Collins	836.25
Class 9.—Provender:	
Robt. Gore	175.73
Wilson & Weniger	288.00
James Brownley	202.40
Miller & Wittman	217.90
Louis E. Lake	215.95
Corcoran & Collins *	175.25

* Accepted.

† Informal.

Schedule of proposals for supplies for the Boston Navy-Yard under Bureau advertisement dated May 1, 1896; opened May 19, 1896.

Class 1.—Flax canvas:	
Manhattan Supply Co	$1,036.34
E. B. Thurber	10,733.10
O'Jaffé & Pinkers *	9,582.57
N. Roynton & Co	10,771.04
Class 2.—Cotton canvas:	
Manhattan Supply Co	6,424.23
Geo. L. Neville	10,556.85
Fearing, Hall & Whiton	6,727.68
John H. Tissot, jr. *	5,532.14
Class 3.—Cotton twine:	
Manhattan Supply Co	171.20
Geo. H Hebberd *	165.85
E. B. Thurber	194.74
George L. Neville	267.50
Fearing, Hall & Whiton	192.60
Shoemaker & Busch	208.65
Class 4.—Beeswax:	
Manhattan Supply Co	220.00
E. B. Thurber	180.00
Geo. L. Neville	225.00
Shoemaker & Busch *	167.50
Class 5.—Bellows leather:	
Manhattan Supply Co	249.90
Henry S. Manning	227.46
Bolles & Wilde	255.00
Class 5.—Bellows leather—Continued.	
General Equipment and Engineering Co	$193.80
E. B. Thurber	311.10
Geo. L. Neville	306.00
S. C. Forsaith Machine Co	214.20
National Leather Belting Co. * †	193.80
Class 6.—Hair for cushions:	
Manhattan Supply Co	151.30
Thomas M. Farley *	139.06
Henry S. Manning	164.65
Bolles & Wilde	142.40
General Equipment and Engineering Co	204.70
E. B. Thurber	142.40
Geo. L. Neville	178.00
Class 7.—Grommet rings, etc.:	
Manhattan Supply Co	158.43
Geo. A. Hebberd	159.82
Henry S. Manning	175.26
Bolles & Wilde	256.09
General Equipment and Engineering Co	259.80
E. B. Thurber	189.73
Geo. L. Neville *	136.53
S. C. Forsaith Machine Co	186.84
John H. Tissot, jr	172.71

Schedule of proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated May 9, 1896; opened May 26, 1896.

Class 1:	
Manhattan Supply Co	$52.40
Philadelphia Machinery and Supply Co	49.00
General Equipment and Engineering Co. *	38.50
National Leather Belting Co	39.00
James Reilly Repair and Supply Co.	41.70
Geo. L. Neville	43.20
Leo Loeb	42.75
Frank W. McNeal	41.04
Brooklyn Hardware and Sporting Goods Co	38.85
Class 2:	
Wm. P. Dodson	171.50
Manhattan Supply Co	176.94
Philadelphia Machinery and Supply Co	221.95
Francis Harral	157.85
James Reilly Repair and Supply Co. *	147.21
John H. Tissot, jr	197.27
Geo. L. Neville	236.44
Henry F. Chorley	174.38
S. C. Forsaith Machine Co	182.76
J. H. Chesley & Co	215.03
Frank W. McNeal	159.00
McFadden Co	176.60
Class 3:	
Wm. P. Dodson *	74.02
Manhattan Supply Co	111.58
Philadelphia Machinery and Supply Co	97.08
Francis Harral	144.48
James Reilly Repair and Supply Co.	92.12
Class 3—Continued:	
John H. Tissot, jr	$99.37
Henry F. Chorley	95.98
S. C. Forsaith Machine Co	126.75
J. H. Chesley & Co	99.01
McFadden Co	91.88
Brooklyn Hardware and Sporting Goods Co	105.44
Class 4:	
Manhattan Supply Co	25.41
General Equipment and Engineering Co. *	24.09
J. H. Chesley & Co	33.40
McFadden Co	30.56
Brooklyn Hardware and Sporting Goods Co	27.78
Class 5:	
A. P. Swoyer & Co	78.85
Manhattan Supply Co	137.87
General Equipment and Engineering Co	74.24
Francis Harral	78.15
James Reilly Repair and Supply Co. *	71.50
Geo. L. Neville	78.17
S. C. Forsaith Machine Co. ‡	82.86
Class 6:	
J. B. Kendall *	1,000.00
J. W. Paxson & Co	1,125.00
Class 7:	
James Reilly Repair and Supply Co.	415.20
J. B. Kendall	298.50
S. C. Forsaith Machine Co	291.00
Wm. J. Coane *	288.75
J. W. Paxson & Co	360.00

Schedule of proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated May 8, 1896; opened May 26, 1896.

Class 1:	
Brooklyn Hardware and Sporting Goods Co	$62.35
Wm. P. Dodson	64.80
Francis Harral	63.50
General Equipment and Engineering Co	157.00
Manhattan Supply Co	58.50
Geo. L. Neville	85.50
Chas. H. Moore	56.42
John H. Tissot, jr	65.50
Frank W. McNeal	56.95
James Reilly Repair and Supply Co. *	55.93
Mayer & Co	80.50
Class 2:	
W. L. Bilisoly	$230.00
Wm. P. Dodson	237.00
Francis Harral	195.00
General Equipment and Engineering Co	324.95
Manhattan Supply Co	215.00
Geo. L. Neville	750.00
Frank W. McNeal *	165.00
James Reilly Repair and Supply Co.	197.50
Mayer & Co	235.00
Class 3:	
Brooklyn Hardware and Sporting Goods Co	350.00

* Accepted. † Tie bid. ‡ Informal.

Schedule of supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 3.—Continued.	
Wm. P. Dodson*	$281.50
Manhatton Supply Co	339.50
Geo. L. Neville	292.50
Chas. H. Moore	328.00
John H. Tissot, jr	332.50
S. C. Forsaith Machine Co	313.12
Max Frank	297.50
Mayer & Co	423.75
Class 4:	
Francis Harral	240.41
General Equipment and Engineering Co	274.01
Class 4.—Continued.	
Manhattan Supply Co.*	239.67
Geo. L. Neville	315.07
S. C. Forsaith Machine Co	349.10
Mayer & Co	321.15
Class 5:	
Wm. P. Dodson	271.20
A. P. Swoyer & Co.*	149.25
Geo. L. Neville	246.00
James Reilly Repair and Supply Co.	154.02

Schedule of proposals for supplies for the navy-yard, League Island, Pa., under Bureau advertisement dated May 5, 1896; opened May 26, 1896.

Class 1.—Blocks:†	
A. P. Swoyer & Co	$571.95
J. Jacob Shannon & Co	579.02
Manhattan Supply Co	409.42
Chas. J. Field	404.56
Class 2.—Bolts, etc.:	
J. Jacob Shannon & Co	245.26
Manhattan Supply Co	220.96
Chas. J. Field	134.73
James Reilly Repair and Supply Co.*	111.16
Class 3.—Deck lights, etc.:	
A P. Swoyer & Co	240.11
Chas. J. Field	251.86
Benj. H. Shoemaker*	214.65
James Reilly Repair and Supply Co.	217.68
Class 4.—Hardware:	
J. Jacob Shannon & Co	973.92
Manhattan Supply Co	901.98
Francis Harral	505.44
Charles J. Field	456.50
James Reilly Repair and Supply Co.*	439.28
Class 5.—Lumber:	
Elias Pohl*	425.00
Class 6.—Tools:	
J. Jacob Shannon & Co	281.30
Manhattan Supply Co.*	128.55
Francis Harral	200.36
Chas. J. Field	214.68
Brooklyn Hardware and Sporting Goods Co	202.55
Class 7.—Metals:	
General Equipment and Engineering Co	117.29
Class 7.—Metals—Continued.	
Manhattan Supply Co	$147.61
Chas. J. Field*	111.63
James Reilly Repair and Supply Co.	121.76
Class 8.—Packing:	
J. Jacob Shannon & Co	594.86
Albert Gan	706.80
Frank W. McNeal	470.41
James Reilly Repair and Supply Co.*	303.39
Class 9.—Pipe and fittings:	
Henry F. Chorley	211.10
J. Jacob Shannon & Co	224.70
General Equipment and Engineering Co	317 77
Chas. J. Field*	200 78
Class 10.—Ship chandlery:	
A. P. Swoyer & Co.*	394.81
J. Jacob Shannon & Co	399.75
Chas. J. Field	590.75
Class 11.—Tools:	
Henry F Chorley	695.19
J. Jacob Shannon & Co	776.43
Francis Harral	665.46
Chas. J. Field*	636 97
Class 12.—Lumber:	
Geo. L. Neville	5,548.00
Nathan B. Gaskill	5,747.60
Elias Pohl*	2,499.35
Class 13.—Lumber †	
Class 14.—Lumber.	
Nathan B. Gaskill	635.25
Elias Pohl*	602.25

Schedule of vroposals for supplies for the New York Navy-Yard under Bureau advertisement dated May 6, 1896; opened May 26, 1896.

Class 1:	
James Reilly Repair and Supply Co.*	$17.13
Brooklyn Hardware and Sporting Goods Co	41.16
Class 2:	
Francis Harral	18.98
James Reilly Repair and Supply Co.*	12.35
Class 3:	
John Tissot, jr	49.56
Francis Harral	37.73
James Reilly Repair and Supply Co.*	32.56
Brooklyn Hardware and Sporting Goods Co	35.15
Class 4:	
A. P. Swoyer & Co	96.25
General Equipment and Engineering Co.*	85.10
James Reilly Repair and Supply Co.	91.96
Class 5:	
Geo. L. Neville	382.50
Manhattan Supply Co	109.65
Frank W. McNeal*	84.15
James Reilly Repair and Supply Co.	100.73
E. B. Thurber	133.75
Class 6:	
Manhattan Supply Co.*	120.00
Frank W. McNeal	132.00
Class 7:	
Geo. L. Neville	$300.00
Manhattan Supply Co	244.06
Atlas Cement Co.*	203.00
Class 8:	
Geo. L. Neville	735.00
Watson & Fittinger	492.00
E. L. Richardson*	469.50
Chas. E. Pell	720.00
Class 9:	
Watson & Pittinger*	756.25
E. L. Richardson	779 75
Chas. E. Pell	(‡)
Class 10.—Brushes:	
Marcss Jenkins	1,259.28
Chas. Beissbarth	936 00
Manhattan Supply Co	992.40
John H. Tissot, jr	1,126.08
Geo. H. Hebberd*	844.64
James Reilly Repair and Supply Co.	892.60
E. B. Thurber	1,251.60
Class 11.—Alcohol:	
Smith, Kline & French*	1,260.00
Shoemaker & Busch	1,372.50
Class 12.—Polishing paste:	
Manhattan Supply Co.*	2,272.50
John H. Tissot, jr	2,500.00

* Accepted † Open purchase. ‡ Informal.

Schedule of proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 12.—Polishing paste—Continued.	
Frank W. McNeal	$2,587.50
Fiske Bros. Refining Co	2,322.00
Geo. William Hoffman †	1,725.00
E. B. Thurber	2,450.00
Class 13.—Brown twill:	
Geo. L. Neville	474.00
Smith, Kline & French Co	450.00
General Equipment and Engineering Co	473.00
Frank W. McNeal	400.00
Fiske Bros. Refining Co	538.00
James Langmuir	419.90
Jno. Lucas & Co	445.00
E. B. Thurber * ‡	400.00
Class 14.—Castile soap:	
Geo. L. Neville	$150.00
Maross Jenkins	(†)
Manhattan Supply Co	124.00
Smith, Kline & French Co. *	100.00
Shoemaker & Busch	104.50
Fiske Bros. Refining Co	102.50
James Reilly Repair and Supply Co.	130.00
E. J. Lavine	(†)
E. B. Thurber	145.00
Class 15.—Sponge:	
Manhattan Supply Co	60.00
Frank W. McNeal	75.00
Peter Van Schaack	(†)
E. B. Thurber *	35.00

* Accepted. † Informal. ‡ Tie bid.

REPORT

OF

THE SURGEON-GENERAL,

U. S. NAVY.

NAVY DEPARTMENT,
BUREAU OF MEDICINE AND SURGERY,
Washington, D. C., October 1, 1896.

SIR: In obedience to instructions contained in Department's letter of July 8, 1896, I have the honor to report the operations of this Bureau for the last fiscal year, accompanied by a set of annual estimates for the fiscal year ending June 30, 1898, and statistical report showing the health of the Navy for the year 1895. The report embraces a statement of the condition of the naval hospital fund, the naval medical establishment, and other matters of interest pertaining to the duties of the Bureau of Medicine and Surgery.

NAVAL HOSPITAL FUND.

The condition of this fund is as follows:

Balance on hand July 1, 1895		$339,505.60
Transferred to the credit since July 1, 1895		96,566.72
Credit by appropriation for fiscal year 1896		20,000.00
		456,072.32
Expended since July 1, 1895		141,242.99
Balance on hand June 30, 1896		314,829.33

APPROPRIATIONS.

No increase in annual appropriations has been asked for.

Estimates have been submitted for two ambulances for use at the naval hospitals at Portsmouth, N. H., and Mare Island, Cal., where they are urgently needed; the ambulance at the naval hospital, Mare Island, having been condemned as worn out and of obsolete type.

An estimate of $1,000 for the cemetery at the United States naval hospital at Brooklyn, N. Y., is submitted, the medical officer in charge of the above hospital having urgently represented the necessity for placing this cemetery in good condition.

NAVAL HOSPITALS.

Naval hospital, Portsmouth, N. H.—No improvements have been made at this hospital during the past year, with the exception of making

minor repairs where necessary to the woodwork of the hospital building, and improving and putting in order the grounds of the hospital inclosure.

Repairs to the steam-heating plant are now being made, and this work will soon be completed.

Naval hospital, Chelsea, Mass.—During the past year the roof of the hospital building has been reslated, and new copper has replaced copper and tin over a portion of the roof; new copper conductors and gutters have been supplied. All outside woodwork has been repaired and painted. The roofs of the medical director's house and adjoining veranda have been repaired and woodwork of building renovated. Minor repairs have been made to the ward for contagious diseases, also to laundry and stable.

Naval hospital, Brooklyn, N. Y.—Owing to the repairs and improvements now being made at this hospital, an account of which is found in another part of this report, there were relatively few patients under treatment during the past year, the number being limited by frequent transfers to other naval hospitals.

Besides the special repairs above referred to, minor repairs to grounds and outbuildings have been made, two wrought-iron gates have been erected at entrance to hospital grounds, and the gatehouse has been renovated and enlarged.

Naval hospital, Philadelphia, Pa.—The sanitary improvements of this hospital have been continued during the past year, and it will now compare favorably with the most advanced of our civil and military establishments.

Repairs on north wing of building are completed, and the wards occupied. A modern operating room has been fitted and thoroughly equipped for the aseptic performance of operations. All of the old sanitary fittings, including water closets, bathtubs, sinks, and wash basins have been removed and modern fixtures introduced. The installation of the electric light throughout the entire building has been completed, and gives much satisfaction. As the steam heating plant is not sufficient for properly heating the entire building during cold weather, since the occupation of the north wing, the Bureau will take steps toward having the system modified to meet the conditions now existing.

Naval hospital, Washington, D. C.—No material changes have been made during the past year in the hospital or grounds. The paving of Tenth street east, which has been commenced, will add much to the comfort of patients. The hospital is now being furnished with a modern operating room, properly equipped for the performance of operations, and it is hoped that it will be completed at an early date.

Naval hospital, Norfolk, Va.—During the past year much has been accomplished toward a complete rehabilitation of this hospital. The roof has been repaired and painted and steam heat and combination electric fixtures have been introduced. The south wing is now being made ready for the reception of patients, and when completed it will double the capacity of the hospital. A new operating room and lavatory, etherizing, sterilizing, dressing, surgical, and receiving rooms have been added, and these will soon be fitted with modern surgical appliances. Two new 30-horsepower boilers (built at the Navy-Yard) have been placed in the boiler house, and the latter has been repaired and painted. The wagon shed has been repaired and refloored with cement concrete and a new hospital wharf and boathouse have been erected.

Besides the above repairs, considerable work has been done in repairing the roads, paths, and brick walks, and in trenching, ditching, and draining within the hospital grounds.

Naval hospital, Pensacola, Fla.—No repairs have been made to the hospital buildings during the past year. In order, however, to prevent deterioration to buildings and to have the hospital thoroughly equipped for immediate occupation, should the emergency arise, a complete renovation of the hospital and outbuildings has been commenced, under the supervision and direction of the Bureau of Yards and Docks, and will soon be completed.

Naval hospital, Mare Island, Cal.—Many minor repairs have been made at the hospital during the past year. The entire basement area of the hospital, with the exception of the two dining-room floors, has been paved with artificial stone, and all basement woodwork and walls have been painted, and wooden and iron plates placed over the lines of the pipes.

There has been a general renovation of grounds and outbuildings, drains and sewers.

Naval hospital, Yokohama, Japan.—Minor repairs have been made to the buildings during the past year and the grounds of the hospital have been placed in excellent condition. All of the woodwork of the detached ward has been renovated and the walls replastered.

The supply of water has been increased by the building of a cistern with a capacity of 15,000 gallons, affording an additional protection against fire

IMPROVEMENTS AND REPAIRS, NAVAL HOSPITAL, NEW YORK.

The work under contract at this establishment has progressed slowly, as shown by the weekly reports received and on file to May 2, 1896.

Fraudulent work on boundary wall was reported by laborers employed by contractor on April 11 and 21, 1896. These reports were forwarded officially for investigation, and, being found correct, all work was stopped April 28, 1896, and a board ordered by the Department, consisting of Civil Engineers U. S. G. White and C. C. Wolcott, U. S. N., and Mr. A. W. Lane, foreman, department of yards and docks, to examine and report upon all work done under the contract, to determine whether any fraudulent work had been done in parts other than the boundary wall heretofore examined.

The contract for work referred to was made July 9, 1895, and work commenced in conformity with specifications July 17, 1895, as stated in last report, and if the terms of the contract had been fulfilled the entire work should have been completed in six calendar months. The delay has greatly interfered with the duties of the hospital and caused general discomfort to officers and the few patients kept there under treatment.

The report of the board, submitted and dated June 16, 1896, having been carefully considered, the Department directed, July 21, 1896, in view of the matters brought to light concerning the work done under the contract dated July 9, 1895, under the provisions of said contract, the same to be declared forfeited on the part of the contractor, notifying him and each of his bondsmen to that effect. This was immediately done by registered letters, all duly acknowledged.

Permission was obtained July 22, 1896, to have the work required under contract for repairs and improvements at the naval hospital, Brooklyn, N. Y., completed under two contracts, as follows:

1. For making good the defective work on new boundary wall.
2. For making good the defective work, and completion of improvements and repairs on the hospital.

In obedience to instructions, advertisements were issued August 20, 1896, for proposals for work specified under section 2, in accordance with plans and specifications approved by the Department, and advertisements issued August 25, 1896, for work specified under section 1, also according to plans and specifications approved by the Department.

Bids to be opened, respectively, September 21, 1896, and September 28, 1896.

Five bids were received to complete the work at the United States naval hospital, Brooklyn, N. Y., as follows, viz:

Thomas Dwyer, 106 East One hundred and sixteenth street, New York	$47,000
D. S. Hess & Co., 876 Broadway, New York	38,900
Arthur H. Weeks, 2150 Fulton street, Brooklyn	32,000
M. Gibbons & Son, 318 Columbia street, Brooklyn	29,975
Isaac A. Walker & Son, 1213 Filbert street, Philadelphia	26,491

The firm of Isaac A. Walker & Son, lowest bidders, have at present under consideration the question of scaling their bid within the limit of the available appropriation ($26,000).

Two bids were received for making good the defective work on boundary wall, as follows, viz:

Thomas Dwyer, 106 East One hundred and sixteenth street, New York	$15,120
M. Gibbons & Son, 318 Columbia street, Brooklyn	9,375

A contract for the work in question can not be awarded to the lowest bidder until the Bureau is informed of the result of the legal proceedings recently commenced against contractor and bondsmen in connection with contract dated July 9, 1895.

The improvements contemplated under these contracts consist in extensive alterations in the interior construction of the hospital building, including a complete renovation of the woodwork, flooring, plastering work, and paint work.

Certain rooms, designated for the accommodation of sick officers, by rearrangement are made into suites of three rooms each, so that each officer shall have, instead of a single room, which in some instances is smaller than is considered desirable, two rooms with bathroom and closet attached. By judicious arrangement this very great addition to the comfort of the occupant is accomplished with the minimum sacrifice of other considerations, the total air space allotted to each patient under the former arrangement being considerably increased in these apartments made en suite. Rearrangement of medical officers' quarters is also carried out in a similar manner.

Complete renovation of the entire system of water supply and drains has been made, with the substitution of new and improved bath tubs of enameled iron, and of marble basins with modern connections and traps throughout, together with a considerable increase in the number thereof. The old catch basins are eliminated and direct sewer connections made.

Although electricity is the illuminating medium employed, it is provided that the building be repiped for gas, so that in the event of the failure of the current from any cause no embarrassment would result.

A new feature is the installation of a modern-type electric elevator of ample capacity to accommodate a ward litter with patient and attendants.

The steam capacity of the boiler house is considerably augmented by the addition of a horizontal steel return tubular boiler, designed to carry a gauge pressure of 80 pounds. Additional radiators are also distributed throughout the building.

The corridors on the first floor are to be laid in vitrified tile of neat design, and the main stairway replaced by a new one.

In addition to improvements in hospital building, there is to be erected in the courtyard a three-story structure of brick, in which will be located the mess hall, dispensary, chapel, and operating room.

The operating room is to be 25 by 45 feet, well lighted by a large central skylight. The floor is to be of smooth vitrified tile, with a gentle slope from all sides to a central drain, of most approved construction. The walls will be finished in cement, and a curved glazed tile base will make connection between the floor and the walls. Adjoining the operating room, and with it constituting the entire third floor, are the etherizing, recovering, and sterilizing rooms, and also accommodations for medical officers to prepare themselves for operating.

Across the driveway, in the rear of the courtyard building, a two-story brick structure is designed, on the first floor of which is located the kitchen, with steam cooking apparatus and two large modern ranges in the equipment. On the second floor a commodious smoking room for convalescents is provided, having a "kosmocrete" floor. Both buildings are to be electric lighted, steam heated, and artificially ventilated.

By act of Congress approved June 10, 1896, brick material was allowed to be used for construction of ward authorized by act approved July 26, 1894, and a similar additional ward allowed to increase needed capacity of hospital, making an amount of $50,000 available for the purpose, the same to be paid from that portion of the naval hospital fund accruing from the sale of naval hospital grounds to the city of Brooklyn, and placed to the credit of the naval hospital fund, in pursuance of the provisions of the act approved July 2, 1890.

In view of the proposed increased accommodations for the sick, a board was recommended June 17, 1896, to determine upon and report to the Department the most desirable sites in the hospital grounds for the wards about to be erected under authority of the act referred to, and the approximate size and character of each ward; also to consider, in selecting the sites, the question of sunlight, accessibility to main building and court building under construction, preservation of architectural effect of hospital proper, and necessity of preserving harmony of all other buildings within the inclosure.

After a careful examination of maps and drawings, hospital buildings and grounds, the board recommended a building about 50 feet wide by 155 feet long, two stories high, with basement, built of buff face brick and white marble or other light-colored stone trimmings; the building to be located parallel to the south wing of the main building, and distant about 65 feet; thus receiving the sun's rays obliquely upon one side in the morning and upon the other side in the afternoon.

The recommendation of the board was approved by the Department.

Information regarding character of building, etc., was furnished architects in New York and Washington, upon their application, with permission to prepare preliminary drawings and estimates, at their own risk and expense.

Satisfactory preliminary plans and specifications for proposed new wards were submitted by the firm of Smithmeyer & Didden, architects, of Washington, D. C., based upon the report of the board above mentioned, and authority was requested of the Department, September 29, 1896, to have them present plans and specifications in detail, and to advertise for the work when such plans and specifications shall have been submitted and approved.

Upon receipt of Department's letter, dated October 2, 1896, granting the desired authority, the architects were immediately notified to prepare the plans in question.

EXTENSION OF NAVAL HOSPITAL, WASHINGTON, D. C.

The necessity for increased accommodations for the sick at this establishment is apparent.

The records of the hospital for the five years 1891 to 1895, inclusive, show 36 admissions of officers, with a total of 1,265 sick days; other admissions, sailors and marines, number 528. Patients are received at this hospital chiefly from the navy-yard and marine headquarters, but from time to time they are transferred here from other hospitals, from coast survey vessels, and from other vessels, foreign or belonging to our own Navy, which may be in port; also old sailors and marines on the retired list who have no suitable home and when taken ill find a refuge here.

The officers attached to the navy-yard and marine headquarters number about 50, while the number of sailors and marines is about 240. Besides the above, there are in and about Washington 250 or more officers, active and retired, liable to need hospital accommodations and treatment.

The situation of the hospital is excellent, occupying an entire square of land on four streets, having thus abundant sunlight and fresh air. The elevation above the navy-yard is inconsiderable, but sufficient to make a very great change perceptible in the condition of malarial patients transferred. The mere change from the one place to the other has sometimes sufficed to put a stop to an attack of malarial fever.

There is but one separate room in which a sick officer can be isolated. Additional accommodations should be provided, so that the whole of the two principal floors could be allotted to patients, the lower or main floor to officers, and the second floor to the enlisted men. The medical officers on duty should be lodged in an annex, which could be easily built within the present grounds and in connection with the hospital proper, and an appropriation with this object in view should be submitted at an early date.

NAVAL HOSPITAL, WIDOWS ISLAND, MAINE.

The history of this hospital has been given in full in previous reports, and a bill has been prepared and submitted to the Department, for approval and transmission to Congress, to dispose of the property as soon as it can be done on satisfactory terms, and the proceeds derived from the sale devoted to the renovation of such other naval hospitals as require to be placed in a modern sanitary condition. Minor repairs are continued, to keep the building in as good a state of preservation as possible.

HOSPITAL MAPS AND PLANS.

Necessary directions have been given to prepare for the files of the Bureau complete maps showing lines of water supply, sewerage, heating, gas and electric lighting of all buildings and grounds of the different naval hospitals, as follows, viz:

1. Location of all water mains, noting material, size, length, and connections.
2. Location of sewers, brick or pipe, size and length.
3. Lighting: Number and location of gas and electric lamps, gas mains, and electric-light wiring.
4. Location of telephone wires, stations, and connections, and of hydrants, fire-alarm stations, and buildings.

5. Heating: System employed, location of steam pipes and radiators.

This work became essential in order to carry on duty intelligently at the various establishments, to prevent damage, and facilitate repairs.

Blue prints of plans when received are forwarded to the particular hospital to which they belong, with directions to have them placed on file with symbols used for easy reference, and to report to the Bureau when alterations are necessary, by emergency or otherwise, so that they can be made on the maps, in accordance with scale, with date of order authorizing the change.

The scale used for grounds is 100 feet to the inch, and of buildings one-fourth of an inch to the foot.

The work has been finished and plans submitted of hospital buildings and grounds at New York, Philadelphia, and Norfolk, and blue prints have been forwarded to these hospitals and the medical officers on duty instructed to familiarize themselves with the subjects considered. Plans for other hospitals will be transmitted as soon as received.

Complete sets of hospital maps and plans are sent to the Naval Museum of Hygiene for exhibit and study. The value of such plans will be readily understood by everyone who has had any experience in hunting for connections or leaks in old buildings and grounds without plans for guidance.

CEMETERIES AT NAVAL HOSPITALS.

The cemeteries of the several naval hospitals have had very little done to them since the war, and are in no way creditable to Government establishments.

Special appropriations will be required for each one to place them in such a condition that they can be cared for in the future by the hospital force.

The sum of $1,000 was allowed in the appropriations of present fiscal year for the complete renovation of the naval cemetery at Mare Island, California, and the sum of $1,000 has been submitted in estimates for next fiscal year, to be expended on the cemetery at naval hospital, New York.

For labor and material for widening of approaches, and repairing and painting all gates and fences; for making graveled roads and paths, building walls where necessary, properly grading the whole area, and planting appropriate shrubbery.

These cemeteries are visited annually on Decoration Day by representatives of patriotic societies, and should be placed in good condition, and kept so.

A uniform record of burials has been adopted for all hospitals.

NAVY-YARDS.

Navy-yard, Portsmouth, N. H.—The health record of this station has been excellent, no diseases of a contagious or infectious nature having occurred. The total number of sick under treatment was 126, and number transferred to hospital 36.

The yard is in need of a modern system of sewerage, a better supply of water, and the introduction of an electric-light plant.

Navy-yard, Boston, Mass.—The health of this yard during the past year has been satisfactory. The total admissions to the sick list have been 137, and of these 41 were invalided to hospital. A single case of epidemic catarrh of mild type emphasizes the disappearance of the disease which has been so prevalent of late years, and but one case of

measles occurred. Two cases of tuberculosis pneumonica acuta were invalided to hospital. The injuries to workmen employed in the yard have been few in number and none were of a serious nature.

The statistics of vaccination performed during the year show very clearly the necessity for its unremitting employment. Of the total number vaccinated (172) 40 were successful, a percentage of 23. Primary vaccinations were invariably successful.

Marine barracks.—There has been little improvement in the sanitary condition of the marine barracks during the year. The same defects exist which have been pointed out in previous reports. The ventilation of the sleeping quarters is not satisfactory, being only that afforded by the natural means of open doors and windows, practicable in mild weather, but impossible during the winter months, when cold drafts are created, subjecting the inmates to conditions prejudicial to health.

It is proposed to add another story to the barracks; and while this will give more cubic feet of breathing space it will not entirely remedy the difficulty, although lessening it. The double bunk, as at present in use, is condemned as being undesirable for various reasons, particularly as the ceilings are so low. The location and character of the water-closets used by the guard call for immediate improvement. They are imperfectly ventilated and lighted, and the only escape for vitiated air is by the mess room and courtyard. It is suggested that openings into the wash room be closed and a shaft introduced into the water-closet from the ceiling to several feet above the roof of the building, and that a double-door arrangement be made; additional openings to furnish light will also be necessary. These proposed changes have been referred to the colonel commandant of the Marine Corps for his consideration and action.

The floor of the court should be covered with concrete instead of brick, as at present, for the latter is always damp from retained moisture, and is prejudicial to health. The electric light should also be introduced into the barracks.

Prison.—The remarks as to the defects in the ventilation of the quarters of the marine guard apply with equal force to that of the prison; it is adequate in mild weather, but not during low temperatures, as open doors and windows are objectionable. Methods should be devised for admitting fresh air without subjecting the inmates to dangerous drafts. It will not be difficult to improve this condition of affairs, but to make it nearly perfect will require change and proportional expense. The gratings of the lower cells should be extended to the floor, thus admitting more air and light. These cells are 8 feet deep and are dark and ill ventilated. It is recommended that the inner row of cells be used for very short time prisoners.

Dispensary.—The building in which the dispensary is located remains in the same condition as for many years past, in spite of its unfitness in character and site. A special report relating to this subject was referred to the head of the department of yards and docks for review and estimate and is now under consideration by the commanding officer, before submitting it to the Bureau of Yards and Docks.

The present ineffective system of drainage and sewerage will, it is hoped, soon be replaced by modern scientific methods, as the connecting of the yard with the system of the Metropolitan Sewer Company of Massachusetts is pending.

Navy-yard, New York.—The sanitary condition of the yard itself, and

of the houses situated in it, has been satisfactory. One case of typhoid fever was treated at the officers' quarters, marine barracks, and the disease was in all probability contracted outside of the yard. The fever was of a mild type and seemed benefited by the use of the chlorine treatment.

Owing to the removal of the steam-heating apparatus and the coal to an adjoining building, the office of the medical inspector, the dispensary, and the storerooms are in a better condition than heretofore. The supply of heat to these premises is insufficient without the use of stoves.

The following is a list of the accidents and injuries which occurred among the employees of the yard during the past year: Wounds, 54; contusions, 18; fractures, 2; minor troubles (vertigo, colic, etc.), 12; total, 86.

Navy-yard, League Island, Pa.—Attention is called to the necessity of furnishing the yard with a supply of pure water, improving the drainage, and of introducing the electric light.

The marine barracks are situated at the entrance gate to the navy-yard, and are adjacent to the low, marshy land lying between the yard and the city of Philadelphia. Notwithstanding this undesirable location, the health of the post has been remarkably good.

If the erection of new buildings for the marines is contemplated, it would be desirable to have them located on the Delaware River front, and on the western end of the island.

Navy-yard, Washington, D. C.—The sanitary condition of the yard during the past year has not been satisfactory. During the summer and autumn months malarial fever of a severe type prevailed extensively, a large proportion of the cases being of a remittent character. During the year there were 250 admissions and 48 readmissions to the sick list. Of this number, 216 returned to duty and 79 were transferred to hospital.

There was a loss of one thousand and twenty-one days from sickness, due principally to the large number of cases of malarial fever.

Reports have been received that apprentices transferred from this yard to other stations all suffered from attacks of malarial fever, undoubtedly due to climatic exposure while undergoing instruction at the yard.

Navy-yard, Norfolk, Va.—During the past year the health record of this yard has been better than in the preceding two years. On January 1, 1895, there remained on the sick list 2 patients; admitted and readmitted during the year, 114; discharged to duty, 74; to hospital, 39; died, 1; remaining on the list December 31, 1895, 2. There were 88 candidates examined for enlistment in the Marine Corps, and, of these, 55 were accepted.

The defect in the arrangement of the sewers at the marine barracks, to which attention was called in a previous report, has been remedied in accordance with the plans suggested by the board appointed to consider the matter.

From examinations frequently made of the water at this yard, obtained from driven wells, it has been found entirely unsuited for drinking purposes, owing to the excess of chloride of sodium contained in it.

Navy-yard, Pensacola, Fla.—The sanitary condition of the yard for the past year has been good, and the health of the officers and men has been excellent.

The artesian wells sunk by the Bureau of Yards and Docks have entirely failed to furnish the yard with a supply of potable water, and all wells have been abandoned for this object and are now only used for fire purposes.

The number of deaths on the reservation during the past year from all causes was 27. The entire absence of typhoid fever, and the marked decrease of the number of cases of malarial fever, in contrast with that of previous years, is undoubtedly due to the substitution of cistern water for surface well water for drinking and cooking purposes.

A better system of drainage is advocated for the reservation.

Navy-yard, Mare Island, Cal.—The health of the yard has been generally good, with the exception of a few cases of malarial fever and a number of cases of diarrhea, which prevailed in the last two quarters of 1895.

A new building, to be used exclusively by the medical department of the yard, and to be fitted up with a medical storehouse, dispensary, and surgeon's office, is imperatively needed. The space at present allotted to the medical department is a part of the equipment building, partitioned off from the rigging loft and entirely unsuitable for the above purposes, being badly ventilated and lighted, and not sufficiently roomy for the proper preservation of Government property. A better system of sewerage is also required.

NAVAL STATIONS.

Naval training station, Newport, R. I.—The sanitary conditions of this station have been satisfactory, the only epidemic disease having been la grippe and measles, the former prevailing in a mild form, though complicated with pneumonia in several cases. There were but 14 cases of measles, and the disease was quickly stamped out. The supply of water furnished has been far from satisfactory, but this difficulty will be obviated by the introduction of a wholesome supply from the Newport Water Company.

Naval station, New London, Conn.—The station has been comparatively free from disease, although, owing to the number of salt and fresh marshes adjacent to the reservation, cases of malarial fever, more or less severe in type, have prevailed during the past year.

Attention to sanitary measures by the introduction of a system of sewerage would tend largely toward improving the health of the station.

Naval station, Annapolis, Md.—The good health of the station has been maintained throughout the past year. There were 19 admissions, involving sixty-one sick days, for injuries received at the game of foot ball, and 90 excuses from drills from the same cause. The injuries consisted of 1 luxation, 2 fractures, 1 inguinal hernia, 2 cases of concussion of the brain, and a number of minor sprains and contusions.

The water supplied the Naval Academy has been more satisfactory in quantity and quality than formerly, and after filtration is as palatable as could be desired.

Attention is called to the unsuitable character of the Academy buildings, many of them being badly ventilated, unsatisfactorily lighted and heated, and some of them in a condition almost beyond repair.

The sewerage system of the Academy is defective and unsatisfactory and proper means should be adopted for carrying the sewerage into deep water at some distance from the Academy grounds.

During the past year the sick quarters have been partially renovated.

A modern operating room, with aseptic furniture and a bacteriological and chemical laboratory, will be introduced at an early date.

Marine headquarters, Washington, D. C.—The health of the post has been satisfactory during the past year, except that in the months of September, October, and November an unusually large number of cases of malarial fever prevailed, which undoubtedly was caused by the unsanitary condition existing at the navy-yard, which was made the subject of a report by a sanitary board to the Department in May, 1895.

Beyond some minor improvements in the introduction of modern water-closets and bath tubs, there has been no change in the general sanitary condition of the post.

Naval station, Port Royal, S. C.—The health of the station has been remarkably good. There have been but few cases of malarial fever, and in no case was the disease attributable to conditions existing at the station. Although the supply of drinking water has been increased by the construction of an additional cistern, yet the amount is not sufficient for the needs of the station. A condensing apparatus is recommended.

A small pavilion hospital is urgently needed for the requirements of the station, where, owing to the equable climate, all cases of incipient pulmonary disease may be treated with a fair prospect of recovery.

Naval station, Puget Sound, Port Orchard, Wash.—The health of the officers and workmen attached to this station has been good during the past year. Several cases of typhoid fever occurred in the vicinity of the station in the summer, indicating defective drainage and an impure water supply. No danger need be apprehended for the station, however, from this source, as an artesian well is now being bored that will furnish an abundant supply of pure water.

The houses now being built for the officers at the station are situated on elevated ground overlooking the bay, and from their position will afford every facility for good drainage.

The soil is nearly all sand, and this, with the elevation of the houses, insures against dampness; arrangements for heating them are good, and they will be lighted by electricity.

RECEIVING SHIPS.

U. S. receiving ship Wabash.—The sanitary condition has been good, and the ship made more comfortable by the introduction of the electric light. The average complement for the year was 165. Record of enlistments for the year shows: Number examined, 334; accepted, 231; rejected, 103.

U. S. receiving ship Vermont.—The records show a satisfactory sanitary condition of the ship. The food issued is of good quality and sufficient in quantity. Berthing space is abundant, and the bathing facilities ample.

During the past year 358 new cases were under treatment; of these, 277 were discharged to duty, 72 sent to hospital, 4 discharged from the service, and 1 given sick leave. There were 4 deaths. There were 5 cases of measles, all of them mild in type, and the disease did not assume an epidemic form. During the year there were 2,876 physical examinations for enlistment; of these, 1,767 were accepted, 31 rejected for color blindness, and 1,078 for other causes.

U. S. receiving ship Richmond.—During the past year 505 recruits have been examined; accepted, 334; rejected, 170. Apprentices examined, 302; accepted, 155; rejected, 147. Total number of examinations

for enlistment during the past year, 807. The health of the ship has been good. During cold weather, from October to May, the ship is heated by steam, and condensed water is used for drinking and cooking purposes. During the summer months water for these purposes is supplied by water boat and collected above the entrance into the Delaware River of the city's sewage.

The medical department of this ship now occupies spacious, well-lighted quarters, situated on the port side of the quarter deck, and consisting of an examining room 24 feet in length, 7 feet in width, and 6 feet between decks, and a dispensary, large, well ventilated, and properly fitted up.

U. S. receiving ship Franklin.—The records show that during the past year 385 men were examined for enlistment; accepted, 258; rejected, 127. One hundred and eighty-three of the applicants were examined for first enlistment; of this number 83 were accepted and 100 rejected.

The sanitary condition of the ship has been excellent, and there were no cases of special interest under treatment. Total number treated, 63; discharged to duty, 45; transferred to hospital, 15; died, 1, and remaining under treatment, 2.

U. S. receiving ship Independence.—Records of enlistment for the past year show that 1,138 were examined; accepted, 725; rejected, 413.

As a large proportion of the enlistments for our ships cruising on the Asiatic and Pacific stations are made on this ship, adequate measures should be taken toward fitting up a large well-lighted and ventilated room for properly carrying on this duty.

RECRUITING.

The following table shows the record of enlistments and rejections for the year 1895:

Where examined.	Number examined.	Number accepted.	Number rejected.	Number color-blind.
U. S. R. S. Wabash, Boston, Mass	334	231	103	17
U. S. R. S. Vermont, New York, N. Y	2,876	1,767	1,109	31
U. S. R. S. Minnesota, New York, N. Y	793	288	505	66
U. S. R. S. Richmond, Philadelphia, Pa	807	480	321	27
U. S R. S. Franklin, Norfolk, Va	385	258	127	10
U. S. R. S. Independence, Mare Island, Cal	1,138	725	413	35
Marine rendezvous, Boston, Mass	233	198	35	.....
Marine rendezvous, Philadelphia, Pa	326	180	146	5
Marine rendezvous, San Francisco, Cal	657	298	359	46
On cruising vessels and at shore stations other than marine rendezvous and receiving ships	2,438	1,815	623	30
Total	9,987	6,246	3,741	269
RECAPITULATION.				
All receiving ships	6,333	3,755	2,578	186
All marine rendezvous	1,216	676	540	51
Shore stations and cruising vessels	2,438	1,815	623	30

Number rejected per 1,000, 374 +. Color blind per 1,000, 26 +.

NAVY PENSIONS.

The following statement shows the amount and character of the work carried on under the pension division of this office during the fiscal year ended June 30, 1896, including calls from the Pension Office, examination of records of officers for promotion and retirement, reports of medical survey, certificates of death, and miscellaneous reports and papers.

All pension cases have been answered promptly and satisfactorily, and at the close of the fiscal year there were no calls from the Pension Office remaining unanswered in this Bureau.

It is also gratifying to state that the miscellaneous work embraced in this division of the office has been brought up to date.

Number of pension cases remaining on hand June 30, 1895	238
Number received during fiscal year ending June 30, 1896	3,288
Number answered during fiscal year ending June 30, 1896	3,526
Number remaining on hand June 30, 1896	0

The miscellaneous reports associated with the pension work during the fiscal year ending June 30, 1896, are shown by the following record:

Number of cases for board of medical examiners received and answered	112
Number of cases for retiring board received and answered	43
Number of cases from Judge-Advocate-General of the Navy received and answered	11
Number of cases from Civil Service Commission received and answered	25
Number of Congressional, Auditor for the Navy Department, and miscellaneous letters received and answered	104
Number of certificates of death received	107
Number of reports of medical survey received and acted upon	477
Number of reports of physical disqualification received and acted upon	211

UNITED STATES NAVAL MUSEUM OF HYGIENE.

The fourteenth annual report of this establishment gives in detail the progress of work during the last fiscal year.

The buildings have been painted on the outside, stone and brick piers have been removed from the basement, and new floors have been laid in library and buildings. Unused cisterns have been filled in and a new heating plant is being introduced.

The museum exhibit is being carefully arranged and new exhibits put in place. The library has been completely refitted and books have been classified and arranged ready for use. Many valuable additions in the way of State and municipal health and water reports, Government publications, and private contributions have been received, and an unusual amount of important work has been done by the officers of the museum.

The hygienic care of ships and the prevention of epidemic diseases have been subjects of a careful report. Careful reports have been prepared on materials and supplies, new inventions, etc., and in the laboratory many chemical and bacteriological examinations of water, urine, blood, milk, etc., have been made. One hundred and ninety-two large and valuable photographs were prepared for the office of the Secretary of the Navy. The variety of work performed increases each year as the growth and progress of the museum continue. As a central national museum of sanitary science, it should be second to none in the world.

UNITED STATES NAVAL LABORATORY AND DEPARTMENT OF INSTRUCTION.

The course of instruction established by Department circular dated June 22, 1893, at the United States Naval Laboratory and Department of Instruction for junior medical officers of the Navy, preliminary to entering upon active service, has been attended with the most satisfactory results.

Besides affording the young officers a practical insight into their professional studies, it gives them an opportunity of becoming conversant with the usages and customs of the service and familiarizing themselves with the duties of medical officers, afloat and on shore,

without which preparatory instruction they would be confronted with serious difficulties and placed at a disadvantage in the performance of their duties.

Seventeen assistant surgeons have attended the course of instruction since its establishment, and an examination of their papers, submitted by the corps of instructors through the director of the laboratory, gives evidence of conscientious work.

Several medical officers recently promoted to the grade of passed assistant surgeon have availed themselves of the special facilities afforded in many of the branches of the prescribed course.

SUPPLY TABLE, MICROSCOPES, ETC.

The supply table of the Medical Department of the Navy has been improved by the addition of bacteriological and chemical supplies for laboratories, and an outfit of aseptic furniture for operating rooms at all naval hospitals.

A standard outfit of microscopes and accessories has been perfected: (1) For hospitals; (2) for ships and navy-yards.

The cases have been specially prepared under the direction of the Bureau, careful attention being given to accessibility of contents and compactness. These instruments will be furnished at an early date. For special microscopical work, medical officers of the several stations are permitted, upon application to the officer in charge, to visit the naval hospitals and use the more elaborate outfits supplied those institutions.

A splint, constructed to give steady, continuous extension in fractures of the femur, has been favorably reported upon, and will be furnished the Medical Department as required. A wood-pulp splint for general use has also been selected.

BACTERIOLOGICAL AND CHEMICAL LABORATORIES AT HOSPITALS.

Complete outfits of bacteriological and chemical supplies, systematically and conveniently arranged, have been selected for small laboratories at all naval hospitals for diagnostic purposes and investigations of questions in pathology and hygiene. This subject is considered by the Bureau to be one of no small importance, and as the laboratories will soon be in working order it is believed that hospital work will be carried on in future with additional precision and accuracy.

ASEPTIC OPERATING ROOMS AND FURNITURE.

All naval hospitals have been specially equipped with aseptic operating rooms and furniture to meet the demands rendered imperatively necessary by the steady advancement in surgical treatment.

The ceilings and walls, to within 6 feet of the floor of rooms set apart for the purpose at hospitals at Portsmouth, Chelsea, Philadelphia, Washington, and Yokohama, were painted with two coats of lead paint. The walls, to a height of 6 feet from the floor, were painted with three coats of porcelain-enamel paint, and all the metal and woodwork covered with two coats of xylo-enamel paint. All cracks in the floor were filled with putty, and on this was placed one coat of a buff-colored stain, this covered with one coat of shellac and finally with two coats of floor-enamel paint. As these enamel paints form a hard, smooth surface, which can be readily cleaned with antiseptic solutions, they were used on the floors and walls instead of tiling on account of decreased cost.

A sufficient number of electric lights, with movable burners that can be used when required to reflect light into cavities, or in using laryngoscope or endoscope, have been introduced and properly located to insure artificial light during operations. For cleansing instruments, etc., these rooms have been fitted with porcelain sinks, accessible on all sides, with movable brackets, hot and cold water faucets, and waste pipes trapped with "bottle" trap; oval wash basins, with marble slabs, furnished with hot and cold water faucets, "Belmer" waste and "Puro" trap, and a sufficient number of glass shelves at convenient points supported by white enameled-iron brackets, and glass rods for holding towels.

The aseptic furniture supplied includes nickel-plated water sterilizers, with two tanks, capacity 15 gallons each, to supply absolutely sterile water, "Standard" horizontal dressing sterilizers, instrument sterilizers, Bolts's operating tables, glass irrigators on white enameled iron pedestals, wheeled stretchers of white enameled iron on rubber rollers, and every other article necessary to complete an aseptic outfit to meet every emergency. The operating rooms at the naval hospitals of Norfolk and New York differ from the others only in having separate and connecting etherizing, recovering, sterilizing, and receiving rooms. They are new in design, and prepared with interior fittings of cement, tiles, etc.

DISINFECTING PLANT ADOPTED FOR NAVAL HOSPITALS.

Disinfecting plants of modern make will be installed at all hospitals in connection with the laundry.

The oven adopted will rest in circular openings in the laundry wall, and be so fitted as to totally exclude communication. The disinfectors will include metallic retaining straps for mattresses, and two galvanized-wire cages for holding clothing and other articles undergoing disinfection. The room in connection with the laundry to receive disinfecting chambers will be made of smooth brick, resting upon suitable foundations, covering a ground space of sufficient size, and constructed so as to completely cut off and isolate the two apartments. These are to be finished throughout with Portland cement, so that they can be easily washed by water or antiseptic solutions. The disinfector when fixed in the wall completely isolates the door of entrance to the chamber for contaminated articles from the door of exit after disinfection—the manipulation of valves to take place from the purified end.

BOOK OF INSTRUCTIONS.

The revision of the Book of Instructions for Medical Officers so as to meet the requirements of the service is receiving careful attention, and contemplates a uniform system of regulations for the administration of all hospitals, and instructions relating to the care and preservation of roads, trees, buildings, grounds, and cemeteries. Specific instructions will also be issued relating to recruiting, inventories, requisitions, surveys, and sanitary reports, and methods to be observed in properly caring for microscopes and surgical instruments.

FIRST ANNUAL STATISTICAL REPORT UNDER SYSTEM ADOPTED JANUARY 1, 1895.

The present statistical report is based upon a plan that went into effect on January 1, 1895. It is thus the first compilation under the

new system. The results are very satisfactory, and an accurate report of the occurrence and effect of disease and injury in the naval service is now presented. The new nomenclature is well adapted to the requirements of the Navy, and is the product of a careful consideration of modern pathology, the terms employed being regarded as the most comprehensive allowed by the present system of medical education. The classification of diseases is chiefly anatomical, but in the formation of certain important classes causation has been allowed to control.

In addition to greater accuracy in the designation and grouping of diseases, the system includes a method of preventing the appearance among the admissions of the same case more than once, every admission for the continuance of the same disease being regarded as a readmission, the original admission only being counted. It therefore results that under this system the number of admissions for any one disease during a year is the actual number of cases of that disease occurring during that year or of individuals who suffered from it.

In the special instructions issued to medical officers it is enjoined that no symptom shall be considered as the diagnosis of any case when it is practicable to classify it under the disease which is its cause, and that in making a diagnosis preference shall be given to the primary disease, except where the secondary disease is the main or only cause of admission or overshadows the primary disease. While medical officers are not limited to the nomenclature, a place under each class being provided for other diseases of that class, they are cautioned to avoid terms synonymous with those appearing in the table. The number of diseases specified has been greatly increased and every facility given for the expression of an accurate diagnosis in each case.

New tables have been added and important additional information secured.

In view of the above it is apparent that the statistics commencing with the year 1895 can not properly be compared with those of any preceding year. However, on the present basis valuable data are obtained which will annually increase in value and admit of definite comparisons in future years.

VACANCIES IN THE MEDICAL CORPS OF THE NAVY.

The record during the last fiscal year is nearly a repetition of the figures presented in the last annual report. There were 341 applications made to the Department concerning the appointment of assistant surgeons in the Navy. Replies containing instructions were promptly forwarded in every instance. Out of the number only 36 applied for permission to appear before the naval medical examining boards, as follows:

California	2	North Carolina	4
Connecticut	1	New Jersey	2
District of Columbia	1	New York	4
Georgia	1	Ohio	1
Indiana	2	Pennsylvania	6
Iowa	1	Texas	1
Illinois	1	Vermont	1
Kansas	2	Virginia	2
Kentucky	1	West Virginia	1
Massachusetts	1		
Maryland	1	Total	36

Of the 36 mentioned who received permission, 22 availed themselves of the opportunity to appear before the boards, and of this number

there were 4 rejected physically and 12 rejected professionally, leaving only 6 out of the 341 original applicants, representing every section of the country, who were found qualified for appointment as assistant surgeon, viz:

Connecticut	1	Ohio	1
Georgia	1	Virginia	1
North Carolina	1		
New York	1	Total	6

This state of affairs has existed for years, and will undoubtedly continue until there is some favorable legislation for junior medical officers of the Navy.

At this date there are 10 vacancies in the grade of assistant surgeon, and the Bureau is embarrassed by not having a sufficient number of medical officers to fill important stations ashore and afloat.

Many ships and hospitals are kept without their legitimate quota of officers, and, unless this is in some way speedily remedied, by reason of the increase of men in the Navy and the number of new ships placed in commission annually serious consequences must follow. On account of the great number of vacancies existing and the probability of the number increasing instead of diminishing, it is strongly urged that the recommendation contained in the Bureau's letter addressed to the Department on the subject, dated February 8, 1896, be approved, that "a special law be enacted authorizing the Secretary of the Navy, during the present exigency, to appoint acting assistant surgeons for temporary duty in the Navy until the number of vacancies in the regular medical corps of the Navy are filled." When this is accomplished, their services can be dispensed with and no further appointments made, except in time of war or until additional vacancies occur in the assistant surgeon's grade.

PASSED ASSISTANT SURGEONS.

A bill providing for the professional and physical examinations of passed assistant surgeons, preliminary to promotion to the grade of surgeon, to which attention was called in the Bureau's last annual report, was introduced into both Houses of Congress and favorably reported and passed by the Senate March 2, 1896. The bill has also been favorably considered by the House Naval Committee, and action is expected the early part of next session.

The enactment into law of this proposed bill will contribute materially, both professionally and physically, toward improving the personnel of the corps.

AMERICAN PUBLIC HEALTH ASSOCIATION, AMERICAN MEDICAL ASSOCIATION, ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, AND PAN-AMERICAN MEDICAL CONGRESS.

The American Public Health Association held its twenth-third annual meeting at Denver, Colo., October 1 to 4, 1895, and the Medical Department of the Navy was represented by Medical Director N. L. Bates, in charge of the United States Naval Museum of Hygiene. Owing to various causes the attendance upon the meeting was limited, but this was more than compensated for by the standing and prominence of the delegates present and the character and scope of the papers presented and discussed.

An account of the proceedings will be found among the special reports. The next meeting of the association will be held at Buffalo, September 15 to 18, 1896.

The American Medical Association held its forty-seventh annual meeting on the 5th, 6th, and 7th of May last at Atlanta, Ga., and the Medical Department of the Navy was represented by Surg. J. Shirley Hope, whose detailed description of the proceedings of the association will be found among the papers appended to this report.

Medical Inspector John C. Wise and P. A. Surg. T. C. Craig were detailed to represent the Medical Department of the Navy at the sixth annual meeting of the Association of Military Surgeons of the United States, which convened at Philadelphia, Pa., May 12 to 14, 1896.

Papers were read by these officers, entitled, respectively, "Cooperation in public sanitation" and "The viability of the cholera spirillum in its relation to certain fruit acids." The latter paper is embraced in the special reports.

The proceedings were of unusual interest, many important papers of professional and scientific value being presented and discussed by medical officers of the Army, Navy, and National Guard.

The Mexican Government, through its minister at this capital, extended in February last an invitation to this Government for representatives from the Medical Department of the Navy to be present at the second Pan-American Medical Congress, which will meet in the City of Mexico on the 16th, 17th, 18th, and 19th of November, 1896.

Medical Director George W. Woods was detailed for this duty, and his paper presented to the Congress, entitled "Intestinal Obstruction," will be submitted in a subsequent report.

INVESTIGATION OF PLAGUE IN CHINA AND CHOLERA IN JAPAN.

Upon the request of the Surgeon-General of the Navy, and by direction of the Department, P. A. Surg. W. F. Arnold was detached from the U. S. S. *Petrel*, Asiatic station, and ordered, September 16, 1895, on special duty in connection with the investigation of the outbreak of plague in China and of cholera in Japan, and United States representatives in those countries requested to obtain the necessary authority to enable him to carry on the work desired.

Satisfactory preliminary reports have been received relating to the duty assigned him, and it is believed that the results of his investigation of the subject mentioned will show careful study and reveal additional facts regarding cholera and a knowledge of the recent plague in China so much desired by the health authorities of this country. A synopsis of his general report is appended.

Dr. Arnold's duty extended over a period of ten months, and being completed, he was detached and ordered home July 1, 1896.

SICK QUARTERS ON UNITED STATES NAVAL VESSELS.

Attention was called in the Bureau's last annual report to the necessity of providing improved accommodations for the sick and wounded on board vessels of war, and to the assignment, when practicable, of sufficient space on the gun deck for hospital purposes. It is believed that good results could be accomplished in this direction if the board of inspection and survey were officially directed to pay special attention to the subject, and the medical officer attached to the board required to visit all ships and submit special reports upon their facilities for the

care and treatment of the sick and wounded; defining changes to be made when found necessary and feasible; reporting upon such facts as can be readily obtained relating to officers' quarters, gun and berth decks, number of occupants, and total air space allowed; location and ventilation of holds and bilges, and such other information as would be of value to the Department in determining the character of alterations to be made when the vessel becomes available and before being recommissioned.

NAVAL HOSPITAL CORPS.

The Naval Hospital Corps bill submitted to the Department February 3, 1896, and alluded to in last annual report, embraces, it is believed, all the essential features requisite for an efficient hospital corps, consisting of hospital apprentices, hospital apprentices second class, hospital apprentices first class, and pharmacists, who, it is provided, shall perform all necessary hospital and ambulance service at naval hospitals, naval stations, navy-yards, and marine barracks, and on vessels of the Navy, Coast Survey, and Fish Commission, the corps to be permanently attached to the Medical Department of the Navy, and not included in the effective strength of the Navy, nor counted as a part of the enlisted force heretofore provided by law, but shall be subject to the laws and regulations of the Navy.

All apothecaries serving in the United States Navy shall be known and designated as pharmacists in the Naval Hospital Corps, and shall be placed upon the list of warrant officers with rank, pay, and privileges of the same, and their names shall be entered in the order of their admission to the service, and nothing shall deprive an enlisted or appointed apothecary in the Navy of a warrant as pharmacist in the Naval Hospital Corps, and they shall retain their position in the Hospital Corps of the Navy, and shall be eligible for duty both ashore and afloat.

There shall be as many pharmacists warranted in the Naval Hospital Corps as in the judgment of the Secretary of the Navy the service may require, and not more than one pharmacist shall be stationed at any hospital, laboratory, station, or ship, without special authority of the Secretary of the Navy.

No person shall be warranted as pharmacist in the Naval Hospital Corps, except as above provided, unless he be a graduate in pharmacy or has served by continuous enlistment as hospital apprentice and hospital apprentice second class, and shall have passed a satisfactory examination before a board of two or more medical officers of the Navy as to his qualifications for the position, and no person shall be eligible for such examination except by written authority of the Secretary of the Navy.

All pharmacists in the Naval Hospital Corps who shall have served the time required by law, shall, upon their written request, be placed upon the retired list of the Navy, as provided for other warrant officers; and those who shall have reached the age of 62 shall be placed on the retired list of the Navy with the pay of a warrant officer, retired, of the highest class.

Hospital apprentices of the first class of the Naval Hospital Corps may be detailed as acting pharmacists by the Secretary of the Navy, upon the recommendation of the Surgeon-General, whenever the necessities of the service may require it, and while so detailed they shall receive the benefits of the laws relating to pharmacists warranted in the Naval Hospital Corps. On board of vessels away from the United States this detail may be made by the commander of the squadron, or

in the case of a vessel acting singly, by the commanding officer, upon the recommendation of the senior medical officer of the vessel. The permanency of such detail to be subject to the approval of the Surgeon-General and Secretary of the Navy.

The Secretary of the Navy is empowered to enlist or cause to be enlisted as many men in the Hospital Corps as the service may require, and to limit or fix the number; and any enlisted man in the Navy shall be eligible for transfer to the Hospital Corps as hospital apprentice.

Upon enlistment or transfer, as hospital apprentice in Hospital Corps, they shall be admitted for instructions to the training schools for nurses, to be established by the Secretary of the Navy at the United States naval hospitals located at Mare Island, Cal., Chelsea, Mass., Brooklyn, N. Y., Philadelphia, Pa., Washington, D. C., and Norfolk, Va. This instruction shall be continuous at training schools, stations, and on vessels, from first enlistment until qualified as pharmacist. While undergoing instruction they shall perform duty as ward masters, cooks, nurses, and attendants in hospital and as stretcher bearers, litter bearers, ambulance attendants, and such other duties as may by proper authority be required of them. If found unfitted by any cause to receive instructions or to perform intelligently the responsible duty of attending to sick and wounded men, the fact shall be reported to the Secretary of the Navy, who may authorize their discharge from the service.

The pay of hospital apprentice of the Hospital Corps, first enlistment, shall be $18 per month; that of hospital apprentice, second class, if continuous enlistment, $22 per month; that of hospital apprentice, first class, if continuous from first enlistment, $25 per month.

All benefits derived under existing laws, or that may hereafter be allowed by law to other enlisted men in the Navy, shall be applied in the same manner to the enlisted men in the Hospital Corps of the Navy. Enlistments for duty in the Hospital Corps of the Navy shall be for the term of four years.

In estimating continuous service for pharmacists who have been appointed from the enlisted force of the Naval Hospital Corps, they shall be credited with the service performed as hospital apprentice, hospital apprentice, second class, and hospital apprentice, first class.

The Secretary of the Navy shall make such rules and regulations for the government of pharmacists and enlisted men of the Naval Hospital Corps as may be necessary.

Recruiting for service in the Naval Hospital Corps shall be at such hospitals as are provided with training schools for nurses.

With a well-equipped and thoroughly organized hospital corps, as contemplated, every emergency arising either in war or peace can be promptly and intelligently met, and the important questions properly solved relating to the means and best methods of handling and caring for wounded in battle on board of modern ships of war. No definite results can ever be obtained without an organization. The Medical Department of our Army discovered the necessity of a hospital corps organization years ago, and it has kept pace with similar corps in foreign armies. Such corps exist in the medical departments of the navies of all important powers, and there should be no further delay in incorporating the system in our own service. Aside from the advantages that would be gained by the regular Navy, our obligations of assistance to the medical department of the Naval Militia could be wisely and fairly sustained.

The passage of the bill organizing the Army Hospital Corps has already proved of great benefit to the militia of the different States

and the passage of a similar bill for the Navy would also be advantageous to the Naval Militia, now being rapidly organized. Since the law providing for the wants of the Army, ambulance and hospital corps have been organized and maintained in the militia in over twenty-one States, representing all sections of the country. That such organizations are considered of vital importance by medical men who hold responsible positions in the militia can be shown by the fact that the surgeon-general of Arizona "has organized a hospital corps, to which he gives weekly instruction, and which he is rapidly making very efficient. In the absence of any Territorial appropriation therefor, this officer has provided his corps, at his own expense, with litter, pouches, emergency case, field case, hospital corps knives, and badges."

Although the Naval Militia is organized in New York, Massachusetts, Rhode Island, Louisiana, Maryland, Connecticut, New Jersey, Pennsylvania, Michigan, Illinois, North Carolina, South Carolina, and California no attention has yet been paid to the subject of hospital corps, and probably no organization will be attempted until a hospital corps is established in the Navy, when it can be followed to meet the wants of the Naval Militia in the same manner as the Hospital Corps of the Army is being adopted by the militia of different States. At the present day no naval hospital should be without its corps of well-trained nurses, and no ship should be allowed to go to sea without the requisite number of trained nurses on board. The present system of limiting and picking up nurses for service at naval hospitals and on board ship antedates war times, is detrimental to both patient and medical officer, is obsolete, and should be discontinued as soon as possible. All civil hospitals years ago found the necessity of educating and training their own nurses, established their training schools, and to-day there is not a responsible public institution of the kind in any city of the land but is supplied with a trained corps of assistants.

The same system can be applied in the Medical Department of the Navy by the organization of a Naval Hospital Corps, which has been strongly advocated in previous reports, and is becoming more and more necessary to meet the increasing wants and growth of the Navy.

HANDLING SICK AND WOUNDED—AMBULANCE SHIPS.

Interest continues in the study of this important subject, and the views advanced in the last annual report are still entertained, believing that in the event of battle some efficient and practical provision must be made to care for the wounded, wholly different from what now exists in the Navy. Aside from the many ways at present employed on board different ships by reason of difference in construction, an asylum for their immediate reception should be at hand in every fleet in the event of an engagement. Ambulance or hospital ships specially fitted can only answer this purpose, and until they are allowed the naval medical service will be incomplete. Considerable attention is now being paid to the construction of such vessels abroad, and it is universally conceded that they should be designed and built for this particular duty, and considered an essential part of the fleet of war.

It is interesting to notice, from reports received, the complete organization for field service that exists in the medical department of the British army.

1. The regimental surgeons with the regimental stretcher-bearers.
2. The bearer companies.
3. The field hospitals.

4. The stationary hospitals on the line of communication, the base hospital, and the hospital ship or ships.

By this means continuous medical assistance is afforded the British soldier from the moment he falls in action until his restoration to health at a temporary hospital or discharge from service on account of disability from permanent Government hospital at home, where he has been transferred by ambulance ship. If this is considered essential in an army organization, how much greater appears the necessity in a navy organization.

These relief ships are fast steamers, fitted with comfortable beds, and are equipped and conducted by the officers of the medical staff and men of the hospital corps, who have been thoroughly trained in time of peace in the duties of nursing and caring for the wounded.

On board fighting vessels, in case of war, there can not be sufficient room with proper security to attend to the sick and wounded, nor would there be a sufficient complement of surgeons and nurses to supply the fleet, so the best professional assistance at hand might prove a failure in action.

This whole question of rendering proper assistance in naval warfare is of such interest that public attention abroad has been called to the necessity of establishing "a naval ambulance association for the treatment of sick and wounded at sea," corresponding with St. John's Ambulance Association, the aim being to "succor all during and after the battle without regard to nationality, and to proceed with their rafts to the assistance of the crew" in case of loss of a vessel.

It is stated that in the last naval battle between the Austrian and Italian fleets, now thirty years ago, "more than 400 men were drowned uselessly in the battle while they might have been saved" had an ambulance ship been in attendance.

The plans suggested for vessels provide large wards for officers and men on spar deck for treatment of serious cases, and additional wards, affording ample space, on main deck and lower deck. Natural ventilation is assisted "by a steam-spray extracting apparatus, as well as by a steam-fan blast that pumps in an abundant supply of fresh air."

In addition to the cot outlined in last report for handling and lowering wounded through the small hatches of modern men-of-war, a system devised by John Thompson, seaman, of the U. S. S. *Columbia*, has been used on board with most satisfactory results. The Wells ambulance cot is used, and, with the addition of some fathoms of small rope and snap hooks, the apparatus is easily completed. The seat portion has slats of wood parallel with the thighs to keep it flat, and no matter what portion of the body is wounded, the cot can be adjusted so as to lower the wounded man in a comfortable and easy position, with parts well secured. It is easily handled and readily adjusted. The drawings of this cot for lowering are on file, and a model will be sent to the Bureau on completion.

Reports have been received from abroad, accompanied with prints, relating to the transportation of wounded on board ship by means of the hammock, but on examination do not equal the method adopted by the Department in General Order No. 452.

During the year several persons rescued from the Old Dominion steamer *Wyanoke*, shortly after the collision on the 28th of April last at Newport News, Va., were treated on board the U. S. S. *Columbia*. The cases were of partial drowning, burns, scalds, contusions, shock, chill, and prostration. Owing to the immediate assistance rendered and readiness of supplies, success followed in every instance.

SWINGING COTS FOR SICK BAYS.

The new sick-bay cot, recently adopted by the Bureau for use on battle ships and other vessels when practicable, seems to answer every purpose. It is made of iron, with mattress of wire netting, and suspended so as to swing or not as the patient may desire or the nature of the case requires. The bed frame is 6 feet 2 inches by 2 feet 6 inches; head rail 16 inches high; foot rail 12 inches high, with perpendicular rods riveted in top and to a flat rail 3 inches from bed frame; head and foot rails arranged to fold down flat for transport; suitable stays provided for holding head and foot rails rigid when in use. Four folding legs 6 inches long are provided in order that cot may stand on floor when unshipped from its supports. Two bars are riveted, one at head, other at foot, terminating in a swing shackle by which the cot is hung, and by means of which the rolling motion is to a great extent obviated. The lower end of above is furnished with a hinged clutch, by which the cot can be fixed rigidly on its supports. Two stanchions are provided, each with a double hook, by which the cot is hung; a double hook is provided, so that if necessary the cots may be hung in a continuous line, with only one stanchion to support the head of one cot and the foot of the next cot. Cast-iron sockets are provided for letting into the deck. The lower end of stanchion fits into this socket and is tightened with a suitable wedge key. A wooden table is provided with double nutted iron supports for fixing same to head rail and also canvas sides with eyelet holes in ends and lacings for lashing to head and foot rails, and suitable cross bar, with line for patients to raise themselves.

AMBULANCE SERVICE AND AMBULANCES.

Orders for the two ambulances allowed under appropriation approved June 10, 1896, for use at the naval hospitals at Philadelphia, Pa., and Washington, D. C., have been placed with the Abbot-Downing Company, of Concord, N. H., at a total cost of $1,180 and will be manufactured in accordance with specifications and plans adopted for the ambulances previously supplied by the firm mentioned.

The ambulances are all of modern construction, superior even to those employed at civil hospitals, and most satisfactory, and are considered a great improvement over former methods of transportation of sick and wounded. They are fitted with every necessary appliance to convey patients safely and comfortably, and are used only for this legitimate duty.

An ambulance case has been carefully prepared and accompanies the ambulance whenever it leaves the hospital, with the following outfit, complete and in order:

I. *Case of medicines (leather case).*

Aromatic spirits of ammonia	drachm	4
Brandy	do	4
Chloroform	do	4
Ether	do	4
Fluid extract of ergot	do	2
Hoffman's anodyne	do	4
Spirit of nitroglycerin	do	2
Squibb's mixture	do	2
Tincture of digitalis	do	2

II. *Case of instruments (linen rolling case).*

Forceps, hæmostatic	number	2
Pins, safety	do	4
Scalpel, with folding blade	do	1
Scissors	do	1

III. *Syringe, hypodermic (aluminum case, four tubes).*

Apomorphine hydrochlorate (gr., $\frac{1}{12}$)	tube	1
Atropine sulphate (gr. $\frac{1}{100}$)	do	1
Morphine sulphate (gr. $\frac{1}{4}$)	do	1
Strychnine sulphate (gr. $\frac{1}{30}$)	do	1

IV. *Tourniquets (in linen bag).*

Esmarch	number	1
Instant	do	1

V. *Miscellaneous.*

Bandages, muslin	number	6
Cotton, borated	ounces	2
Gauze, sublimated, in tin	yard	1
Teaspoon	number	1
Whisky, in flask, with cup	ounces	4

GENERAL OUTFIT (TO BE KEPT IN AMBULANCE).

Blanket	number	1
Canteens (potable water)	do	2
Lantern, hand	do	1
Pillow (rubber cover)	do	1
Sheet, rubber	do	1
Splints, selected set	do	1

Hospital instructions are plainly given in writing before the ambulance leaves in obedience to a call, and result of call likewise recorded in accordance with specified form.

The ambulance record, kept on file at all hospitals, embraces date, time, and locality of call, time of leaving, arrival at destination, and return to hospital, with name of patient, where taken, person in charge, etc. All cases are entered, whether in naval service or not.

Two additional ambulances are still needed to make the service complete—one for the United States naval hospital, Mare Island, Cal., to replace one condemned as useless, and one for United States naval hospital, Portsmouth, N. H. An estimate of $1,200 is submitted in the annual estimates to supply said establishments.

Modern ambulance service has been commenced at the following naval hospitals: New York, Chelsea, Norfolk, Philadelphia, and Washington.

CONCLUSION.

In concluding my report I am pleased to state that all work coming under the cognizance of the Bureau has progressed satisfactorily, with the exception of that called for under contract "For improvements and repairs at naval hospital, New York."

The care and comfort of the sick and wounded of the Navy will be much improved by the introduction of iron swinging cots for sick bays of all vessels, and the establishment of an ambulance service at the naval hospitals at Chelsea, New York, Philadelphia, Washington and Norfolk.

Revision of diet tables at hospitals and of the present temperature charts will soon be made and a prescription book adopted for ship use, to accompany the medical journal.

On the 29th of September, 1896, the hospital recently constructed at the United States naval station, Newport, R. I., was transferred to the Bureau, and preliminary instructions have been given preparatory to fitting it up for the reception of patients.

The health of the Navy for the year 1895 is clearly shown by the new statistical tables herewith submitted.

Very respectfully,

J. R. TRYON,
Surgeon-General United States Navy.

The SECRETARY OF THE NAVY.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the Bureau of Medicine and Surgery, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1897.
SALARIES.			
Chief clerk (appropriated, act of May 28, 1896)	$1,800.00		
One clerk of class 3 (same act)	1,600.00		
One clerk of class 2 (same act)	1,400.00		
One clerk of class 1 (same act)	1,200.00		
One clerk (same act)	1,000.00		
One laborer (same act)	660.00		
One janitor for naval dispensary (same act)	600.00		
One laborer for naval dispensary (same act)	480.00		
		$8,740.00	$11,860.00
MEDICAL DEPARTMENT.			
For surgeons' necessaries for vessels in commission, navy-yards, naval stations, Marine Corps, and Coast Survey, and for the civil establishment at the several naval hospitals, navy-yards, naval laboratory and department of instruction, museum of hygiene, and Naval Academy (appropriated, act of June 10, 1896)	65,000.00		
		65,000.00	65,000.00
NAVAL HOSPITAL FUND.			
For maintenance of the naval hospitals at the various navy-yards and stations, and for care and maintenance of patients in other hospitals at home and abroad (appropriated, act of June 10, 1896)	20,000.00		
		20,000.00	20,000.00
CONTINGENT, BUREAU OF MEDICINE AND SURGERY.			
For freight, expressage on medical stores, tolls, ferriages, transportation of sick to hospital, transportation of insane patients; care, transportation, and burial of the dead; advertising; telegraphing; rent of telephones; purchase of books and stationery; binding of medical records, unbound books; and pamphlets; postage and purchase of stamps for foreign service; expenses attending the medical board of examiners; rent of rooms for naval dispensary; hygienic and sanitary investigation and illustration; sanitary and hygienic instruction; purchase and repairs of wagons and harness; purchase of and feed for horses and cows; trees, plants, garden tools, and seeds; furniture and incidental articles for the museum of hygiene, naval dispensary, Washington; naval laboratory, sick quarters at Naval Academy and marine barracks, surgeons' offices and dispensaries at navy-yards and naval stations; washing for medical department at museum of hygiene, naval dispensary, Washington; naval laboratory and department of instruction, sick quarters at Naval Academy and marine barracks, dispensaries at navy-yards and naval stations and ships and rendezvous, and for minor repairs on buildings and grounds of the United States Naval Museum of Hygiene, and all other necessary contingent expenses (appropriated, act of June 10, 1896)	30,000.00		
		30,000.00	30,000.00
REPAIRS, BUREAU OF MEDICINE AND SURGERY.			
For necessary repairs of naval laboratory and department of instruction, naval hospitals and appendages, including roads, wharves, outhouses, sidewalks, fences, gardens, farms, and cemeteries (appropriated, act of June 10, 1896)	20,000.00		
		20,000.00	20,000.00
AMBULANCES FOR NAVAL HOSPITALS.			
For supplying two naval hospitals with ambulances of modern construction to replace vehicles condemned as useless (appropriated, act of June 10, 1896.)	1,200.00		
		1,200.00	1,200.00
NAVAL CEMETERY AT UNITED STATES NAVAL HOSPITAL, BROOKLYN, N. Y.			
Labor and material for widening of approaches, and repairing and painting all gates and fences; for making graveled roads and paths; building walls where necessary, properly grading the whole area and planting appropriate shrubbery (appropriated, act of June 10, 1896)	1,000.00		
		1,000.00	1,000.00

REPORT

OF THE

COMMANDANT OF UNITED STATES MARINE CORPS.

HEADQUARTERS UNITED STATES MARINE CORPS,
Washington, D. C., October 9, 1896.

SIR: I have the honor to submit the following report of the condition of the United States Marine Corps for the past year:

Last spring I made a personal inspection of the marine barracks at the naval station, Port Royal, S. C., and have just returned from a visit to the five northern stations, viz: Portsmouth, Boston, Newport, Brooklyn, and League Island. Norfolk and Annapolis will be inspected by me in a short time.

Some slight necessary repairs have been made at all these posts, and I found them in a condition reflecting credit on the commanding officers.

Congress, at its last session, having provided for the increase of the Corps by 500 men, in accordance with my urgent recommendation and the Department's approval of the same, recruiting has been carried on with all possible dispatch in order that the services of these much needed additional men might become available at the earliest moment, and I am happy to state that the assertion made in my last report that if these men were authorized they could be very easily obtained, has been verified, as since the date of the passage of the act, June 10, 1896, when recruiting began, there have been 672 enlistments, and at the present time the Corps is only 90 men short of its newly authorized strength.

These men have been and are now being carefully instructed in their various duties at the different posts, and the most satisfactory results have followed from these increased numbers, as the duty on the men is lighter and they are in consequence more contented, as is proved by the lessening number of desertions and punishments.

At Newport a house for officers' quarters is being erected, in accordance with a provision made by Congress at its last session, and I am much gratified at the rapid progress being made, insuring as it does the occupancy of the house by January 1, next. The work is being done by contract, under the most careful supervision of the commanding officer of marines at that station, and my inspection convinced me that excellent material and labor were being employed and the Government's interests well protected.

Additional ground at this station for the barracks is much needed, as mentioned in my last report, to which attention is invited, and if the Department would authorize the cession to the Marine Corps of even 100 feet in rear of the barracks it would be of great benefit.

Quarters are also being built for the officer in command of marines at Sitka, Alaska, in accordance with approved plans, Congress having authorized an appropriation of $2,500 for that purpose. This house and the one at Newport will add greatly to the comfort of the officers on duty at those stations.

The officer on duty at Port Royal, S. C., should likewise be provided with quarters, and I trust the item for the same in the estimates for the coming year will be authorized, the necessity therefor being explained in my letter accompanying said estimates, to which attention is respectfully invited.

My inspection at Boston showed the urgent necessity for raising the roof of the barracks and adding another story, as the present building does not accommodate the number of men required there for duty. An estimate for this has been submitted, as well as one for the introduction of electric light, which is much needed, owing to the poor quality of the gas. This is the only part of this station in which electricity is not used.

The Brooklyn Barracks require extensive repairs, due to age and natural deterioration, and an estimate for a special appropriation has been made.

The repairs at the Mare Island post, under the special appropriation of $4,000, are now being made under the direction of the quartermaster, who, with the adjutant and inspector, has made a visit of inspection to this post, as well as to Sitka, during the past year.

The Department having ordered the detail of a guard of marines for the protection of property at the naval station on Puget Sound, Washington, I directed the transfer there, as soon as necessary arrangements could be made for their quarters and subsistence, of 1 first sergeant (in charge), 1 sergeant, 3 corporals, 1 field music, and 15 privates. These are all that could be spared at the time, but I feel convinced of the necessity of adding to this strength in the near future, and detailing an officer in command.

These men are at present quartered on board the *Nipsic*, anchored off the station about 400 feet, and connected therewith by a floating causeway, but provision should at once be made for quarters on shore, and to that end I have submitted an estimate therefor, based on figures furnished by the commandant of the station.

In order that the officers and noncommissioned officers at all posts may be relieved from duties which are properly within the sphere of and should be performed by men specially designated by rank, such as quartermaster and commissary sergeants in the Army, I earnestly renew my recommendation for legislation for the enlistment of 15 quartermaster-sergeants for the Marine Corps, to be appointed and paid like the one already in the Corps. These men would be detailed at all posts and in the offices of the two assistant quartermasters.

In this connection I beg leave to quote from my report of 1891 (page 4):

> I am constrained to recommend that, in any legislation that may be had for the Corps, appropriations be made for 12 quartermaster-sergeants, being one for each post, and one at the offices of the quartermaster at headquarters and the assistant quartermaster at Philadelphia, Pa. The small increase of pay these sergeants would receive, and the holding out to them, as a reward for faithful service, of positions of this character, would prove a great incentive for men to remain in the service. At all army posts a quartermaster or commissary sergeant is deemed necessary, and at posts in the Marine Corps their services would be of as much importance. Few opportunities exist in the Corps whereby the honest and faithful services of the old noncommissioned officers can be rewarded, and in view of the fact that at the different posts the commanding officers are called upon to perform the duties properly coming under the charge of a quartermaster or commissary sergeant, it seems very proper that some means should be afforded whereby they can be relieved from this class of duties.

The increase from 12 to 15 is due to the establishment since then of three new posts, viz, Newport, R. I.; Port Royal, S. C., and Port Orchard, Wash

The duty the officers of the Marine Corps are now performing, in my opinion, requires an immediate increase in numbers, there being at the present time only 40 available for shore duty divided among 12 stations. Deducting from this number 1 on waiting orders and 1 on detached service, there remain but 38, including commanding officers, for duty, or less than 3 to a station, which is practically "day on and day off" duty, and this number is even still further reduced by the usual percentage of sick and those detailed for service on boards, courts, etc., which generally relieves them from officer of the day's duty. This fact necessarily makes the duty very severe and confining.

The enlisted men now are enjoying two days' relief from guard duty, and it is unfair to require officers to perform more arduous duty than their subordinates in the service. In a short time there will be 10 captains at sea, which, with the 20 in the Corps, just permits of a relief; but, as there are only 12 second lieutenants allowed, it will be seen that there is not anything like a relief for them with 10 at sea. Each captain on board ship should have a second lieutenant with him, and on the battleships and large cruisers with guards of 60 men, there ought to be two junior officers—a first and a second lieutenant—to complete the organization; but with present strength they can not be ordered. Nor is it fair when only one junior officer is detailed on a flag or battle ship to send a first lieutenant except in the cases of those who are promoted from second lieutenant while at sea, in which event they should complete their cruise, as ordinarily with present numbers first lieutenants are entitled by their rank to the command of a guard.

There should be a rearrangement of the grades, increasing the captains and second lieutenants and reducing the first lieutenants.

The field officers' grades should also be rearranged, in order to have officers of suitable rank in command of the different posts rather than diverting captains from their duties as company officers without any increase of pay. Such an arrangement would also give promotion to some of the senior captains whose cases are deserving of the highest consideration. These men are veterans of the late war, and are performing the same duties at 54 years of age that they did over thirty years ago, and the senior, Captain Williams, has no hope of promotion to major for four years, in the ordinary course of events, when he will be 58 years old, and after a service of thirty-eight years, twenty-four of which in his present grade.

The second officer on the list, Captain Cochrane, will not be promoted to major until 1902, at 60 years of age and with forty-one years' service, twenty-three of which in present grade. The third, fourth, and fifth captains will be 59, 60, and 61 years of age, respectively, when promoted to major, and all of them will have over forty years' service.

This stagnation is discouraging to good officers, and naturally affects the efficiency of the service.

In the Navy at present officers are promoted to lieutenant-commander, the corresponding rank with major, even with their unwholesome stagnation, at an average age of 46 years, admittedly too old for the best usefulness, but better than these old captains of marines, who are still obliged to go to sea and perform duty side by side with men much their juniors in years, though seniors in rank.

These facts have all been stated before, and present the strongest argument for the enactment of the legislation proposed in House bill

No. 4143, introduced with the Department's sanction at the last session of Congress, and which it is hoped may not be longer delayed.

Our officers are to-day performing harder duty than those in either the Army or the Navy and are honestly entitled to relief.

This same bill provides for the rank of brigadier-general for the Commandant, which it is thought is most appropriate for a command of 2,600 men, besides placing him on an equality in this respect with the corresponding rank held by heads of departments in the Army and Bureaus in the Navy.

It affords me pleasure and gratification to inclose copies of letters from Ensign Belknap, U. S. N., the commanding officer of the *Yorktown*, and the commander in chief of the Asiatic station, concerning the duty performed by the marine guard of the *Yorktown*, and the excellent behavior of the men while at Seoul, Korea, recently for over three months. I respectfully request that they may be attached to this report.

I also ask that the report of the commanding officer of the School of Application for the past year, which is inclosed, together with the report of the Board of Visitors at the closing exercises of this year's class, may also be made a part of this report.

The Department having authorized, as recommended, the supplemental course at the ordnance shops in this city, and at the War College and torpedo station at Newport, two of the officers who graduated at the School of Application were ordered for this instruction, which it is thought was of great benefit to them.

The scarcity of officers this year permits of the ordering of but two to the school, one being First Lieut. Lincoln Karmany, the second in his grade, and the other, Second Lieut Melville J. Shaw, who was appointed to the Corps from the last graduating class at the Naval Academy.

There is still a vacancy for a second lieutenant which existed prior to the assignment of this year's class, but was not filled owing to the small size of the class and its assignment to the Navy vacancies. It is hoped it may be filled next year, as the services of the officer can be well utilized, being much needed.

During the year the following casualities have occurred among the officers: Died: Maj. W. B. Slack (retired), December 3, 1895; Capt. I. H. Washburn (retired), February 6, 1896; Capt. L. J. Gulick (retired), April 20, 1896; Capt. S. W. Quackenbush, June 13, 1896, and Capt. Samuel Mercer (retired), July 22, 1896. This latter officer was retired on January 27, 1896. Second Lieut. C. F. Macklin resigned and Second Lieut. Melville J. Shaw was appointed, as stated elsewhere.

There have been since my last report 769 casualities in the enlisted strength, caused by discharges, desertions, deaths, and retirements, and in the same time there have been 1,200 enlistments and reenlistments.

The recruiting regulations now provide for the acceptance only of citizens of the United States or those who have legally declared their intention to become such—another reason, it is thought, why there has been such a marked decrease in the number of desertions. All recruiting officers have orders to select only the most desirable men, and an excellent class is thus being obtained. There are now 513 aliens in the Corps, and of those 201 have declared their intention to become citizens of the United States, 306 live in the United States but have not declared their intention to become citizens, and only 6 claim foreign residence.

There are 1,448 men on duty at the various shore stations and 1,062 on board ships in commission.

Triplicate copies of the Paymaster's and Quartermaster's estimates are inclosed.

Very respectfully, your obedient servant,

CHARLES HEYWOOD,
Colonel Commandant.

The SECRETARY OF THE NAVY,
Washington, D. C.

MARINES IN SEOUL, KOREA.

U. S. S. YORKTOWN,
Chemulpo, Korea, July 7, 1896.

SIR: I have the honor to bring to your notice the excellent behavior of the marine guard of this vessel during the eight weeks they were under my command at the United States legation in Seoul.

The men early evinced the intention to conduct themselves with propriety. This led me to allow them much latitude and they proved themselves worthy of the confidence so placed in them.

All work was well and cheerfully performed; no man had to be excused from his tour of duty, and not one punishment was necessary. Many complimentary things were said to me of the men, and I am sure they left Seoul with the respect and good will of all its residents. It is difficult to conceive of better behavior.

I am, sir, very respectfully, your obedient servant,

R. R. BELKNAP,
Ensign, United States Navy.

The COMMANDING OFFICER, U. S. S. YORKTOWN.
Chemulpo, Korea.

[First indorsement.]

U. S. S. YORKTOWN (THIRD RATE),
Chemulpo, Korea, July 8, 1896.

Respectfully forwarded for the information of the Colonel Commandant, United States Marine Corps.

C. H. STOCKTON,
Commander, United States Navy, Commanding.

U. S. S. YORKTOWN (THIRD RATE),
Chemulpo, Korea, July 8, 1896.

SIR: Herewith I inclose a report of Ensign R. R. Belknap, concerning the marine guard of this ship while it was stationed at the United States legation at Seoul, Korea, which is considered a matter worthy of your notice.

From personal knowledge I can second the report of Ensign Belknap, and can further say that the United States minister to Korea, Mr. Sill, speaks of the guard as a model one, and expressed in an official letter to me his very high appreciation of its good conduct and faithfulness.

I am, sir, very respectfully,

C. H. STOCKTON,
Commander, United States Navy, Commanding.

The COLONEL COMMANDANT,
Headquarters, United States Marine Corps, Washington, D. C.

[First indorsement.]

U. S. FLAGSHIP OLYMPIA,
Yokohama, Japan, July 20, 1896.

Approved and forwarded.

F. V. MCNAIR,
Rear Admiral United States Navy, Commanding Asiatic Station.

UNITED STATES NAVAL FORCE ASIATIC STATION,
UNITED STATES FLAG SHIP OLYMPIA,
Yokohama, Japan, July 7, 1896.

SIR: Please communicate to Ensign R. R. Belknap, United States Navy, the commanding officer of the guard from the vessel under your command recently maintained at the United States legation at Seoul, Korea, and also to the men who composed the said guard, that the commander in chief has been highly gratified by

the expressions of appreciation of the creditable manner in which their duty was performed which have come to him from the minister resident of the United States at Seoul and from the commanding officer of the *Yorktown*.

Very respectfully,

F. V. McNAIR,
Rear-Admiral, United States Navy,
Commanding United States Naval Force, Asiatic Station.

The COMMANDING OFFICER U. S. S. YORKTOWN,
Chemulpo, Korea.

REPORT OF SCHOOL OF APPLICATION.

HEADQUARTERS SCHOOL OF APPLICATION,
UNITED STATES MARINE CORPS,
Marine Barracks, Washington, D. C., August 25, 1896.

SIR: I have the honor to submit the following report of the operations of the School of Application for the year ending June 30, 1896:

Owing to exigencies of the service the commissioned officers' division consisted of but three members, viz: First Lieut. Thomas N. Wood, Second Lieut. John T. Myers, and Second Lieut. Louis J. Magill.

Lieutenant Wood was detained at New York by duty in connection with a court-martial and did not report until September 20. Lieutenant Myers had joined in March, 1895, and remained, engaged in post duties, while awaiting the beginning of the school year. Lieutenant Magill, the only graduated cadet assigned to the Corps from the last class, joined the school September 2. Lieutenant Wood did not complete the course, owing to his promotion to the rank of captain. The board for his examination convened January 22, 1896, from which date Lieutenant Wood was excused by authority of the Colonel Commandant from the studies and recitations of the class. He continued on duty, however, after his examination, engaged in the routine work of the post and taking part in many of the practical exercises of the school.

Notwithstanding the smallness of the officers' division, the work of the year was attended with excellent results. As heretofore, advantage was taken of the proximity of the ordnance shops and proving ground to study gun construction and witness the test of guns, projectiles, and armor. Considerable time was devoted to topographical work in the field, and the maps and reports relating thereto, prepared by the student officers, were in all respects creditable.

Authority having been granted to extend the course by sending the student officers to ordnance instruction for one month and to the Naval War College for four months, the members of the class, including Captain Wood who rejoined for the purpose, were detached from the School of Application at the end of the course here, April 30, and ordered to the navy-yard. Upon completion of the course in ordnance, Captain Wood rejoined the post and was immediately thereafter detached and ordered to sea. Lieutenants Myers and Magill, after their tour at the ordnance shops, proceeded to Newport, where they now are pursuing the course of instruction at the Naval War College.

Lieut. Joseph H. Pendleton continued on duty as instructor of the commissioned officers, and Lieut. William C. Dawson, a member of last year's class, was assigned as instructor of the enlisted men's division. Lieutenant Dawson was detached on November 14 for sea service, being relieved in his duties at the school by Lieut. John H. Russell, jr., who remained until June 2, when he was also detached and ordered to sea.

The enlisted men's division was composed of 7 sergeants, 5 corporals, and 17 privates, drawn mainly from other stations.

The men not already at the post reported during the latter part of August, and the division was organized and ready when the school year opened. The noncommissioned officers, owing to the small number of officers at the school, were employed throughout the course as acting captains and lieutenants of companies in nearly all the practical exercises, and thus had an exceptional opportunity to gain experience in the command of troops under varying circumstances. They showed zeal and ability in the performance of these duties and the results generally were excellent.

The programme of studies pursued during the year is appended, marked A.

The term ended April 28, and the order of exercises attending the graduation of the classes is shown in the programme appended, marked B.

Very respectfully,

PAUL ST. C. MURPHY,
Captain, United States Marine Corps, Commanding Post.

The COLONEL COMMANDANT, UNITED STATES MARINE CORPS,
Washington, D. C.

A.

OFFICER'S DIVISION.

Department.	Subject.
Infantry	Instructions for Infantry, United States Navy.
	Manual of Guard Duty.
	Blunt's Small-Arms Firing Regulations.
	Springfield Rifle Pamphlet.
	Batchelor's Infantry Fire in Battle.
Artillery	Instructions for Artillery, United States Navy.
	Instructions for Gatling-gun drill.
	Radford's Gunnery Catechism.
	Drill Book for the New Armaments, United States Navy.
Administration and sea service	Accountability Instruction.
	Duties of Marines Embarked.
	United States Navy Regulations.
	United States Army Regulations.
	Recruiting Pamphlet.
Law	Winthrop's Military Law and Courts-martial.
	United States Navy Regulations.
	Administration of Law and Justice, United States Navy.
Torpedoes	Sleeman's Torpedoes and Torpedo Warfare.
	Notes on Submarine Mining.
	Spar Torpedo Instruction, United States Navy.
	Catechism of Explosives, United States Navy.
Engineering	Hutchison's Field Engineering.
	Richard's Military Topography.
	Signaling and Telegraphy.
	Hygiene (lectures).
Military art	Shaw's Modern Tactics.
	Hamley's Operations of War.
	Troops in Campaign.

ENLISTED MEN'S DIVISION.

Infantry	Instructions for Infantry, United States Navy.
	Manual of Guard Duty.
	Blunt's Small-Arms Firing Regulations.
	Batchelor's Infantry Fire in Battle.
	Springfield Rifle Pamphlet.
Artillery	Instructions for Artillery, United States Navy.
	Instructions for Gatling-gun Drill.
	Radford's Handbook of Naval Gunnery.
Administration and sea service	Accountability Instruction.
	Duties of Marines Embarked.
	Recruiting Pamphlet.
Torpedoes	Notes on Submarine Mining.
	Spar Torpedo Instructions, United States Navy.
	Catechism of Explosives, United States Navy.
Field engineering	Notes on Elementary Field Engineering.
	Signaling and Telegraphy.
Field service	Notes on Minor Tactics.

B.

GRADUATING EXERCISES.

THEORETICAL.

Examination of classes, class papers, maps, etc., in section rooms.

PRACTICAL.

Infantry.

School of the squad: Manual of arms; bayonet exercise.

School of the company: Close-order movements; street-riot formation; extended-order drill.

School of the battalion: Close-order movements; battalion street-riot formation.

Field Engineering.

The construction of defenses, consisting of shelter trenches, gun pit, covering pit, and rifle trench.

Signals.

Transmission and receipt of messages from various points

Artillery.

Inspection of battery.

Minor tactics.

Estimating distances, scouting and outpost service, battle formation, attack and capture of position.

Ceremonies.

Review and dress parade.

REPORT BOARD OF VISITORS SCHOOL OF APPLICATION.

WASHINGTON, D. C., *May 1, 1896.*

SIR: We, the undersigned, constituting at your request the Board of Visitors to witness the graduating exercises of 1896 of the School of Application of the United States Marine Corps, have respectfully to report as follows:

The board met at Headquarters United States Marine Corps on April 28, 1896, and being informed of the objects sought to be accomplished by the school as a post-graduate course of instruction, visited the recitation rooms of the school at the barracks at headquarters, and inspected and examined the papers and drawings prepared during examination by the student officers, which showed a very commendable degree of proficiency.

After a thorough examination of the course of instruction, and the appliances provided in connection therewith, the board proceeded to witness the drills and other practical exercises upon the parade ground, prescribed in the programme of exercises, marked A, the execution of which throughout was highly gratifying to the board and promised well for the future practical efficiency of those engaged therein.

In regard to the theoretical branch of the school, while in the main well calculated to accomplish the objects for which the school is established, the board is of the opinion that certain changes in the text-books employed would be advantageous, as, for instance, the substitution of more recent treatise on torpedoes and military topography than the text-books at present in use at the school, and we find also that there is a lack of necessary instruments for practical instruction in topography as connected with military sketching.

At the present time the course of practical instruction is limited, substantially, to drills of various kinds on the parade ground, and to surveying and sketching in the country. The board is of the opinion that great advantage would accrue to the officer students, as well as to the enlisted men undergoing instruction at the school, if this branch could be extended to include practical field engineering, the practical application of the principles contained in the Small-Arms Firing Regulations, practical instructions in minor tactics, and practice marches.

Though the school is yet in its infancy, it has made commendable progress as a means of qualifying the young officers for meeting the demands of the service in future, and we are firmly of the opinion that through earnest and zealous interest on the part of those attending the School of Application, and the fostering care of those in authority, still greater benefits may surely be expected from this post-graduate course.

Very respectfully, your obedient servants,

GEO. C. REID,
Major, Adjutant and Inspector, United States Marine Corps.
E. R. ROBINSON,
Captain, United States Marine Corps.
M. C. GOODRELL,
Captain, United States Marine Corps.

The COLONEL COMMANDANT, UNITED STATES MARINE CORPS,
Headquarters.

APPENDIX A.

Programme of exercises, School of Application, Headquarters Marine Corps, April 28, 1896.

THEORETICAL—9.30 a. m.

Examination of classes, class papers, maps, etc., in section rooms.

PRACTICAL.

Assembly immediately after completion of theoretical examination.

School of the company.—Captains: First company, Lieutenant Myers; second company, Lieutenant Magill.

Close-order movements.—Acting first lieutenants: First company, Sergeant Fairbanks; second company, Sergeant Manning. Acting second lieutenants: First company, Sergeant Heinsohn; second company, Sergeant Lawlor. Guides: Sergeants Meehan, Mawson, Romer, and Glockman.

School of the company, manual, bayonet exercise, extended-order and street-riot drill.—Captains: First company, Lieutenant Myers; second company, Lieutenant Magill. Acting first lieutenants: First company, Sergeant Fairbanks; second company, Sergeant Manning. Acting second lieutenants: First company, Sergeant Heinsohn; second company, Sergeant Lawlor. Guides: Sergeants Meehan, Mawson, Romer, and Glockman.

School of the battalion, close-order movement.—Lieutenant Myers, commanding battalion; Lieutenant Magill, adjutant; Sergeant Pardee, acting sergeant-major. Acting captains of companies: First company, Sergeant Fairbanks; second company, Sergeant Heinsohn; third company, Sergeant Lawlor. Acting first lieutenants of companies: First company, Sergeant Glockman; second company, Sergeant Fentress; third company, Sergeant Mawson. Acting second lieutenants of companies: First company, Sergeant Romer; second company, Sergeant Manning; third company, Sergeant Meehan. Guides: Corporals Quick, Wynne, Simondet, Ingolsby, Elliot, McSween, Perry, and Cornwell.

Battalion street-riot formation.—Lieutenant Magill, commanding battalion; Lieutenant Myers, adjutant. Acting captains of companies: First company, Sergeant Fairbanks; second company, Sergeant Heinsohn; third company, Sergeant Lawlor. Acting first lieutenants of companies: First company, Sergeant Glockman; second company, Sergeant Fentress; third company, Sergeant Mawson. Acting second lieutenants of companies: First company, Sergeant Romer; second company, Sergeant Manning; third company, Sergeant Meehan. Guides: Corporals Quick, Wynne, Simondet, Ingolsby, Elliot, McSween, Perry, and Cornwell.

Scouting and outpost service.—Lieutenant Magill, commanding.

Battle formation of company, attack and capture of position.—Captain Wood, commanding; Lieutenant Myers, commanding firing line; Lieutenant Magill, commanding support. Chiefs of squads: Sergeants Fairbanks, Heinsohn, Lawlor, and Manning.

Defense.—Lieutenant Russell, commanding.

Field engineering.—To explain construction of hasty defenses consisting of shelter trenches, gun pits, covering pits and rifle trenches: Class.

Construction of shelter trench.—Lieutenant Magill, commanding detachment; Sergeant Heinsohn, in charge of working party.

Signaling.—Lieutenant Russell, commanding detachment.

CEREMONIES.

Artillery inspection of battery.—Lieutenant Myers, reviewing officer; Lieutenant Magill, commanding battery; Sergeant Fairbanks, chief of first platoon; Sergeant Lawlor, chief of second platoon.

Review and inspection.—Captain Murphy, reviewing officer; Captain Wood, commanding; Lieutenant Magill, adjutant. Captains: First company, Lieutenant Pendleton; second company, Lieutenant Russell; third company, Lieutenant Myers. Acting sergeant-major: Sergeant Pardee.

Parade.—Captain Wood, commanding; Lieutenant Myers, adjutant. Captains: First company, Lieutenant Pendleton; second company, Lieutenant Russell; third company, Lieutenant Magill. Acting sergeant-major: Sergeant Heinsohn.

APPENDIX B.

HEADQUARTERS SCHOOL OF APPLICATION, UNITED STATES MARINE CORPS,
Washington, D. C., ——— ——, 189—.

Programme of instructions, School of Application, United States Marine Corps.

The school has two divisions—one for commissioned officers and one for enlisted men.

DIVISION FOR COMMISSIONED OFFICERS.

For the purpose of administration and convenience in instruction the course is arranged into departments, as follows:

I. Department of infantry.
II. Department of artillery.
III. Department of administration and sea service.
IV. Department of law.
V. Department of torpedoes.
VI. Department of engineering.
VII. Department of military art.

The course in each department is both practical and theoretical, preference being given to the former whenever it is possible to do so.

The class of student officers report for instruction and duty on September 1 of each year. The instruction then commences in the

DEPARTMENT OF INFANTRY.

The course of infantry is divided into four parts, and consists of recitations, drills, problems, and field exercises.

Part I: Infantry drill instructions.
Part II: Guard duty.
Part III: Small-arms firing regulations.
Part IV: Infantry-fire discipline.

DEPARTMENT OF ARTILLERY.

The course of artillery is divided into two parts, and consists of recitations, drills, and practical exercises:

Part I: Artillery drill instructions.
Part II: Naval gunnery.

DEPARTMENT OF ADMINISTRATION AND SEA SERVICE.

The course in administration and sea service is divided into two parts, military administration and sea service, and consists of lessons and exercises in application:

Part I: Military administration.
Part II: Sea service.

DEPARTMENT OF LAW.

The course of law is divided into three parts, and consists of lessons supplemented by lectures:

Part I: Military law and courts-martial.
Part II: United States Navy Regulations.
Part III: United States Army Regulations.

DEPARTMENT OF TORPEDOES.

The course of torpedoes is divided into four parts, and consists of lessons and exercises of application:

Part I: Torpedoes, offensive and defensive.
Part II: Torpedo fuses.
Part III: Electricity.
Part IV: Explosives.

DEPARTMENT OF ENGINEERING.

The course of engineering is divided into four parts, and consists of lessons, lectures, and exercises in application:

Part I: Topography.
Part II: Field engineering.
Part III: Signaling and telegraphing.
Part IV: Military hygiene.

DEPARTMENT OF MILITARY ART.

The course of military art is divided into three parts, and consists of lessons and exercises in application:

Part I: Minor tactics.
Part II: Grand tactics.
Part III: Strategy.

DIVISION FOR ENLISTED MEN.

Noncommissioned officers and such privates as show sufficient aptitude are taught the theory and principles of the subjects outlined in the programme for their division, but the main object is to give them a thorough practical knowledge of these subjects.

All enlisted men are required to attend the course of practical exercises at the school. Attendance upon the course of studies in the division for enlisted men is compulsory only on the part of all noncommissioned officers.

The course of studies and of practical exercises for enlisted men proceeds with that of the commissioned officers.

The course for noncommissioned officers is arranged into departments, as follows:

Infantry.
Artillery.
Administration and sea service.
Torpedoes.
Field engineering.
Signaling.
Field service.

The method of instruction is essentially the same as for the commissioned officers' division, and consists of recitations, lectures, drills, and field exercises.

HEADQUARTERS UNITED STATES MARINE CORPS,
Washington, D. C., September 10, 1896.

SIR: Complying with the Department's instructions of July 8, 1896, I have the honor to submit for your approval the annual estimates for the support of the United States Marine Corps for the fiscal year ending June 30, 1898.

By the Department's orders a detachment of marines has been sent to the naval station, Port Orchard, Wash., for the protection of Government property, and in the absence of any quarters on shore for these men they are domiciled on board the U. S. S. *Nipsic*, which is now lying there "in ordinary." With the understanding that this is in future to be a permanent station for marines, the quartermaster has, by my direction, inserted in his estimates items amounting to $18,000 for the erection of barracks and officers' quarters, and the preparation of a suitable and necessary parade and drill ground. These estimates are based upon the report in the matter of the commandant of the naval station there, a copy of whose letter is attached hereto.

As this station is fast becoming one of vast importance, owing to the great dry dock now there, and the prospective building of another, which will occasion the frequent coming and going of vessels of war, and the consequent accumulation of valuable property requiring protection, it is necessary to make permanent provision for this garrison of marines, who can not remain quartered always on the *Nipsic* without much discomfort, as the arrangements made on that vessel for their accommodation are only of a temporary character. Aside from this, for strategical reasons marines at a naval station should be quartered in the center thereof, that they may be available for an emergency requiring their services in any part of the yard.

The item of $2,500 has again been inserted for the erection of officers' quarters at the naval station, Port Royal, S. C., which was stricken out of the last estimates by the House Committee on Naval Affairs. The marine officer is the only one attached to this station who has no quarters provided for him, and the meager facilities for hiring them, which makes it necessary for him to live away from his men, a bad military principle, render this condition of affairs one of hardship. The sum asked for is small and should be allowed in the interests of the service, as the Government is now paying to the officer stationed there $288 a year for commutation.

The estimate for adding another story to the marine barracks, Boston, Mass., is again renewed, and it is hoped may be allowed, as there are not proper facilities for quartering the number of men necessary for duty at this navy-yard, wherein is situated the naval prison, entailing as it does additional duty on the marines. The small sum of $3,100 it is thought will accomplish this improvement.

The marine barracks and officers' quarters are the only buildings in the Boston Navy-Yard not lighted by electricity, and in order that the system of illumination may be made uniform throughout, an item of $700 has been inserted for wiring these buildings and installing lights, and if allowed it is confidently believed will result in a great saving to the Government, as stated by the quartermaster in the letter accompanying his estimates, as the bills for gas furnished there are now very large, and the quality of the gas correspondingly poor, all of which the proposed arrangement will remedy.

With the small sum annually appropriated under the head of "Repair of barracks" it is impossible to make any but the most absolutely necessary repairs at the various posts, and from time to time special appropriations have to be asked for for separate posts. This year the barracks at Mare Island are being repaired in such a manner, and it now becomes necessary to make extensive repairs at Brooklyn to prevent rapid deterioration, and for this purpose the quartermaster has inserted an item of $10,000 in his estimates, which he explains in his accompanying letter by stating that the reports of boards of survey on file in his office, coupled with his recent personal inspection of the post, are the basis for this estimate.

Other matters in his estimates he explains in the letter accompanying them, to which attention is respectfully invited, particularly to his showing of so small an increase in the total sum as $2,729.25.

The paymaster's estimates show but trifling change over current appropriations, due, as he states in his accompanying letter, to decrease of amount necessary for officers on the retired list, and an increase for enlisted men on the retired list and for pay of civil force.

As the civil force at these headquarters has, by Executive order, been recently placed under civil-service rules, I respectfully recommend a rearrangement of salaries to correspond with those received by clerks in the other departments of the Government performing like duties, and to that end have had inserted in the paymaster's estimates the sums which in my opinion the duties they perform entitle them to receive. The chief clerks of the various offices should be fourth-class clerks and receive the same pay allowed the chief clerks of the various offices in the Departments; and the second and third clerks employed here should be third and second class clerks, respectively. The sums received now by these men are odd in figures, being established many years ago, and are unlike those in any other Department.

The civil clerical force here is very small compared to the work to be performed, owing to the employment of enlisted men as clerks and messengers; and in that way a considerable saving annually results to the Government, there being eleven of these soldiers so detailed.

The plan proposed will be an increase of only $1,573.80—about the pay of one additional clerk—and in my judgment will be a fitting reward for deserving men who have at present little chance for advancement and who have remained for years at the same salaries, which is discouraging to anyone who efficiently performs his duties. Some of the clerks here have been for many years without any increase in pay.

The paymaster's and quartermaster's letters are inclosed for the Department's further information, and it is a matter to be noted that the total amount estimated for the support of the Marine Corps is but $3,036.85 greater than that appropriated for current fiscal year, a fact which I trust will insure the approval of these estimates as submitted.

Very respectfully, your obedient servant,

CHARLES HEYWOOD,
Colonel Commandant.

The SECRETARY OF THE NAVY.

UNITED STATES NAVAL STATION, PUGET SOUND,
Port Orchard, Wash., July 27, 1896.

SIR: In reply to your letter of the 20th instant, regarding the building of barracks for marines at this station, I have to state that a two-story wooden building 150 feet in length by 30 in breadth, with a porch 8 feet in width the entire length of the building, and having a mess hall, kitchen, offices, and storerooms on first floor, with a center hall across and stairs to second floor, having two dormitories, one in each end, with bath and wash rooms to each; the building to have a center stone cellar and foundation, 3 feet 6 inches from ground, cellar to have two furnaces, one for each end of house, can be built for $10,000. The dormitories, each 60 by 30 feet, would comfortably berth about 60 men, and 80 men could be quartered and messed there.

Wooden officers' quarters, similar to the four just completed at this station, plans of which are in the Bureau of Yards and Docks, Navy Department, can be built for $5,000 each.

Should a parade ground, say 250 by 200 feet, be necessary, about $3,000 more would be needed for stumping, grubbing, and grading the grounds.

I consider, in view of what I believe will be the future importance of this station, that a guard of at least 50 men will be necessary when this station is made a working yard.

Approximate amount necessary.

One barracks building, 150 by 30 feet	$10,000
Two officers' quarters, each $5,000	10,000
Parade ground	3,000
Total	23,000

Very respectfully,

JOHN C. MORONG,
Commander, United States Navy, Commandant.

The COLONEL COMMANDANT MARINE CORPS,
Headquarters United States Marine Corps, Washington, D. C.

HEADQUARTERS UNITED STATES MARINE CORPS,
PAYMASTER'S OFFICE,
Washington, D. C., August 31, 1896.

SIR: I respectfully submit herewith estimates for pay of the United States Marine Corps for the fiscal year ending June 30, 1898.

As compared with the appropriation for current year, changes appear in the several items as follows, viz: The amount required for pay of officers on the retired list is reduced $5,670, owing to decease of three captains since the appropriation was made; the pay of retired enlisted men has been increased $4,403.80, owing to a corresponding increase in the number of men retired, and the pay of the civil force has been increased $1,573.80.

The difference between the amount appropriated for the current fiscal year and the amount called for by these estimates shows a net increase of $307.60, as follows, viz:

Pay of retired enlisted men, increase	$4,403.80
Pay of civil force, increase	1,573.80
Total	5,977.60
Pay of officers on the retired list, decrease	5,670.00
Net increase	307.60

Very respectfully,

GREEN CLAY GOODLOE,
Major and Paymaster United States Marine Corps.

The COLONEL COMMANDANT, UNITED STATES MARINE CORPS,
Headquarters, Washington, D. C.

HEADQUARTERS UNITED STATES MARINE CORPS,
QUARTERMASTER'S OFFICE,
Washington, D. C., August 26, 1896.

SIR: In submitting the annual estimate for the support of the quartermaster's department of the United States Marine Corps for the fiscal year ending June 30, 1898, your attention is respectfully called to the fact that the aggregate sum appropriated for it, as appears in the act of Congress approved June 10, 1896 (exclusive of pay, mileage, and undrawn clothing), amounted to $331,618.75.

The present estimates for the same general objects aggregate $334,348, an increase of $2,729.25, stated as follows:

	Appropriation for 1897.	Estimate for 1898
Provisions	$120,642.75	$100,000.00
Clothing	97,255.00	97,255.00
Fuel	19,500.00	19,500.00
Military stores	13,297.00	13,297.00
Transportation and recruiting	15,000.00	15,000.00
Repair of barracks	23,500.00	45,600.00
Forage	2,800.00	3,000.00
Hire of quarters	6,624.00	6,996.00
Contingent	33,000.00	33,700.00
Total	331,618.75	334,348.00

The estimates now submitted have been predicated, so far as is possible, upon the cost of supplies, obtained under contracts, prevailing in the fiscal year 1896–97.

The changes in amounts, as between those appropriated for the fiscal year 1897 and those embraced in the estimates for 1898, are explained as follows:

Provisions, reduced $20,642.75. The low prices that have prevailed during the past year, and still prevail, enabled this office to contract for rations needed for the different posts of the Marine Corps at very low figures as compared with previous years.

Clothing, fuel, military stores, and transportation and recruiting, estimates for 1898 are the same as appropriated for fiscal year 1897.

Repair of barracks, increased $22,800. By order of the Navy Department a marine post is to be established immediately at Port Orchard, Wash., and for a time the command will be quartered on the U. S. S. *Nipsic;* but the situation of this vessel, the discomforts to the enlisted men attached thereto, and the fact that this navy-yard must in the near future become one of no small degree of importance, seem to render it advisable to erect a suitable barracks, and officers' quarters, and to prepare a suitable parade and drill ground. The sum asked is based upon figures submitted by the naval commandant of that station.

The sum of $3,100 is absolutely needed with which to place an additional story on the Boston barracks. The increased number of enlisted men quartered at this post, caused by the establishment of a naval prison in the navy-yard, requiring quite a large additional guard, renders it necessary to raise the roof of the main building by adding one story. This can not be done out of the amount ($10,000) requested in the estimate for general repairs at our thirteen different posts. The introduction of electric lights into the barracks and the officers' quarters connected therewith, at a cost of $700, is very necessary. Great complaints are being made as to the poor quality of gas supplied by the city of Charlestown, Mass., as well as the enormous bills for the same presented for payment. The Boston Navy-Yard has a complete electric plant, by which the yard, all the naval officers' quarters, and all the public buildings in the yard, save the officers' quarters and the barracks of the Marine Corps, are lighted. It seems proper that this plant should be utilized in these buildings. I am satisfied that a saving of several hundred dollars annually will be the result if this is accomplished.

The buildings, walls, and fences at the New Yo rk post require quite extensive repairs and alterations. From my personal inspection, recently made, and from surveys on file in this office, I am assured that $10,000 can be very judiciously expended under the head of repair of barracks at this post.

Twenty-five hundred dollars have been included in these estimates for the erection of quarters for the commanding marine officer at Port Royal, S. C.

Forage, increased $200. For the last five years the sum of $2,800 has been regularly appropriated, and during each of these years a deficiency has ensued, amounting to about $250. The same condition of affairs will obtain this year. To avoid a probable deficiency in 1898, the estimates are increased over the amount appropriated for 1897 by $200.

Hire of quarters, increased $372. An allowance of quarters for the use of the leader of the Marine Band, and an additional enlisted man as clerk in the office of the colonel commandant, $21 each per month, makes it necessary to increase this appropriation to $6,996.

Contingent, increased $700, for the introduction of electric lights in Boston barracks and quarters. I have inserted, at the suggestion of the Treasury officials, under the head of "Contingent," the following language, being an extract from the act of Congress making appropriations for the Quartermaster's Department, United States Army, approved March 16, 1896, viz:

"*Provided,* That purchases may be made in open market, in the manner common among business men, when the aggregate amount required does not exceed two hundred dollars."

If this becomes a law it will relieve the officers charged with making purchases from the annoyance and labor of preparing advertisements every time a few dollars' worth of supplies are to be obtained, and, in case they are advertised for in the newspapers, making the cost of such advertising amount to nearly as much as the articles themselves.

The general condition of the public buildings under the charge of the quartermaster of the corps, considering the limited amount expended upon them, is satisfactory, and the quartermaster feels justified in the expression of the opinion that the commanding officers are entitled to great credit for the care taken of them, as well as for the economy shown in the expenditure of all public money expended under their immediate supervision.

Very respectfully,

H. B. LOWRY,
Major, Quartermaster, United States Marine Corps.

The COLONEL COMMANDANT, UNITED STATES MARINE CORPS,
Headquarters, Washington, D. C.

HEADQUARTERS UNITED STATES MARINE CORPS,
Washington, D. C., October 28, 1896.

SIR: In accordance with the Department's directions of 27th instant, I have had altered the paymaster's estimates by omitting the submitted increase for pay of civil force, which makes a net decrease in the total amount of said estimates of $1,266.20.

A slight correction of an error in the quartermaster's estimates in the item "Hire of quarters" for enlisted men, has also been made, which reduces the amount of said estimates by $4.

These changes will make a net increase of only $1,463.05 in the total amount estimated to be required for the support of the Marine Corps for the coming fiscal year over that appropriated for current year.

Very respectfully, your obedient servant,

CHARLES HEYWOOD, *Colonel Commandant.*

The SECRETARY OF THE NAVY,
Washington, D. C.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the paymaster of the United States Marine Corps.

Detailed objects of expenditure, and explanations.		Estimated amount which will be required for each detailed object of expenditure.
PAY OF MARINE CORPS.		
Pay of officers on the active list: 1 colonel commandant, 1 colonel, 2 lieutenant-colonels, 1 paymaster, 1 quartermaster, 1 adjutant and inspector, 4 majors, 2 assistant quartermasters, 20 captains, 30 first lieutenants, and 13 second lieutenants		$180,960.00
Pay of officers on the retired list: 2 colonels, 2 lieutenant-colonels, 1 adjutant and inspector, 10 captains, 2 first lieutenants, and 3 second lieutenants	(R. S., p. 272, secs. 1596, 1623; acts June 30, 1834, vol. 4, p. 713, secs. 4, 5; Mar. 2, 1847, vol. 9, p. 155, sec. 3; Aug. 5, 1854, vol. 10, p. 586, sec. 1; Feb. 21, 1857, vol. 11, p. 163, sec. 1; July 17, 1862, vol. 12, p. 594, sec. 2; June 30, 1864, vol. 13, p. 144, sec. 1; Mar. 3, 1865, vol. 13, p. 487, sec. 1; July 28, 1866, vol. 14, p. 334, sec. 13; Mar. 2, 1867, vol. 14, p. 422, sec. 1; Mar. 2, 1867, vol. 14, p. 517, sec. 7; July 15, 1870, vol. 16, p. 330, sec. 3; Jan. 30, 1885, vol. 23, pp. 293, 294, sec. 1; Feb. 14, 1885, vol. 23, p. 305, sec. 1; Navy Regulations, July 18, 1876; Feb. 27, 1893, vol. 27, p. 478, sec. 1; Mar. 2, 1895, vol. 28, pp. 838, 839, sec. 1.)	41,722.50
Pay of noncommissioned officers, musicians, and privates: 1 sergeant-major, 1 quartermaster sergeant, 1 leader of the band, 1 drum-major, 50 first sergeants, 150 sergeants, 220 corporals, 30 musicians, 120 drummers and fifers, and 2,026 privates, and for the expenses of clerks of the United States Marine Corps traveling under orders		456,407.67
Pay and allowances for retired enlisted men: For 1 sergeant-major, 2 drum-majors, 4 first-class musicians, 12 first sergeants, 20 sergeants, 4 corporals, 1 drummer, 2 fifers, and 45 privates, and for those who may be retired during the year		31,403.80
Undrawn clothing: Payment of discharged soldiers for clothing undrawn		23,000.00
Mileage: For mileage of officers traveling under orders without troops		8,000.00
Commutation of quarters to officers on duty without troops where there are no public quarters		4,000.00
PAY OF CIVIL FORCE.		
In the office of the colonel commandant: 1 chief clerk		1,540.80
1 messenger, at $80.94 per month		971.28
In the office of the paymaster: 1 chief clerk		1,600.00
1 clerk		1,496.52
1 clerk		1,257.12
In the office of the quartermaster: 1 chief clerk		1,540.80
1 clerk		1,496.52
1 clerk		1,257.12
In the office of the adjutant and inspector: 1 chief clerk		1,540.80
1 clerk		1,496.52
In the office of the assistant quartermaster, Washington, D. C., or San Francisco, Cal.: 1 clerk		1,400.00
In the office of the assistant quartermaster, Philadelphia, Pa.: 1 clerk		1,400.00
1 messenger, at $1.75 per diem		638.75
Total pay of civil force		17,636.23
Total amount to be appropriated under each head of appropriation		763,030.20
Amount appropriated for the current fiscal year, ending June 30, 1897		764,296.40

Estimates of appropriations required for the service of the fiscal year ending June 30, 1898, by the quartermaster's department, United States Marine Corps.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year, ending June 30, 1897.
Provisions:			
For 1,500 noncommissioned officers, musicians, and privates, and for commutation of rations to 12 enlisted men detailed as clerks and messengers, also for payment of board and lodging of recruiting parties, said payment for board not to exceed $2,500, and no law shall be construed to entitle marines on shore duty to any rations, or commutation thereof, other than such as now are, or may hereafter be, allowed to enlisted men in the Army		$100,000.00	$120,642.75
Clothing:			
For 2,600 noncommissioned officers, musicians, and privates		97,255.00	97,255.00
Fuel:			
For heating barracks and quarters, for ranges and stoves for cooking, fuel for enlisted men, sales to officers, maintaining electric lights, and for hot-air closets		19,500.00	19,500.00
Military stores:			
For pay of chief armorer, at $3 per day; three mechanics, at $2.50 each per day; in all	$3,297.00		
For purchase of military equipment, such as cartridge boxes, bayonet scabbards, haversacks, blanket bags, knapsacks, canteens, musket slings, swords, drums, trumpets, flags, waist belts, waist plates, cartridge belts, sashes for officer of the day, spare parts for repairing muskets, purchase and repair of instruments for the band, purchase of music and musical accessories, medals for excellence in gunnery and rifle practice, good-conduct badges, incidental expenses in connection with the school of application, signal equipment and stores, binocular glasses for the establishment and maintenance of targets and ranges, for hiring established ranges, and for procuring, preserving, and handling ammunition, in all	10,000.00	13,297.00	13,297.00
Transportation and recruiting:			
For transportation of troops, including ferriages, and the expense of the recruiting service: *Provided*, That hereafter the provisions of the clause contained in the act of Congress, approved March 3, 1879, authorizing the Secretary of the Treasury to make such entries upon the books of the Department as will carry to the credit of certain railroad companies named in this act amounts earned or to be earned by them during each fiscal year on account of transportation of the Army and transportation of the mails, be, and the same are hereby, extended and made applicable to the transportation of the Navy and the Marine Corps		15,000.00	15,000.00
Repair of barracks:			
At Portsmouth, N. H.; Boston, Mass.; Newport, R. I.; Brooklyn, N. Y.; League Island, Pa.; Annapolis, Md.; headquarters and navy-yard, District of Columbia; Norfolk, Va.; Port Royal, S. C.; Pensacola, Fla.; Mare Island, Cal.; Port Orchard, Wash., and Sitka, Alaska; and per diem for enlisted men employed under the direction of the quartermasters' department on the repair of barracks and other public buildings	10,000.00		
For raising the marine barracks, Boston, Mass., an additional story	8,100.00		
For the erection of officers' quarters at the marine barracks, naval station, Port Royal, S. C.	2,500.00		
For alteration and repair of marine barracks and other public buildings, and relaying walks and flagging at navy-yard, Brooklyn, N. Y.	10,000.00		
For the erection of a building for marine barracks, naval station, Port Orchard, Wash	10,000.00		
For quarters for officers at naval station, Port Orchard, Wash	5,000.00		
For stumping, grading, and grubbing for a parade ground, naval station, Port Orchard, Wash	3,000.00		
For rent of building for manufacture of clothing, storing of supplies, and office of assistant quartermaster, Philadelphia, Pa.	2,000.00	45,600.00	23,500.00

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year, ending June 30, 1897.
Forage:			
For forage in kind for five horses of the quartermaster's department, and the authorized number of officers' horses		$3,000.00	$2,800.00
Hire of quarters:			
For hire of quarters for officers serving with troops where there are no public quarters belonging to the Government, and where there are not sufficient quarters possessed by the United States to accommodate them	$4,500.00		
For hire of quarters for seven enlisted men, employed as clerks and messengers in commandant's, adjutant and inspector's, paymaster's, and quartermaster's offices, Washington, D. C., and for the leader of the Marine Band, and assistant quartermaster's office, Philadelphia, Pa, at $21 per month each	2,016.00		
For hire of quarters for four enlisted men, employed as above, at $10 each per month	480.00		
		6,996.00	6,624.00
Contingent:			
For freight, tolls, cartage, advertising, washing of bed sacks, mattress covers, pillowcases, towels, and sheets, funeral expenses of marines, stationery and other paper, telegraphing, rent of telephone, purchase and repair of typewriters, apprehension of stragglers and deserters, per diem of enlisted men employed on constant labor for a period not less than ten days, repair of gas and water fixtures, office and barracks furniture, mess utensils for enlisted men, such as bowls, plates, spoons, knives, forks, packing boxes, wrapping paper, oilcloth, crash, rope, twine, camphor and carbolized paper, carpenters' tools, tools for police purposes, iron safes, purchase and repair of public wagons, purchase and repair of harness, purchase of public horses, services of veterinary surgeons and medicines for public horses, purchase and repair of hose, repair of fire extinguishers, purchase of fire hand-grenades, purchase and repair of carts, wheelbarrows, and lawn mowers, purchase and repair of cooking stoves, ranges, stoves and furnaces where there are no grates, purchase of ice, towels, and soap for officers, postage stamps for foreign postage, purchase of books, newspapers, and periodicals, improving parade grounds, repair of pumps and wharves, laying drain, water, and gas pipes, water introducing gas, and for gas, gas oil, introduction and maintenance of electric light, straw for bedding, mattresses, mattress covers, pillows, wire bunk bottoms for enlisted men at the various posts, furniture for Government houses and repair of same, and for all emergencies and extraordinary expenses arising at home and abroad, but impossible to anticipate or classify; and for introducing electric-light wires and necessary fixtures into the marine barracks, Boston, Mass., and officers' quarters attached thereto, $700		33,700.00	33,000.00
Total		334,348.00	331,618.75

Schedule of proposals for supplies for the United States Marine Corps under advertisement of April 3, 1896.

Name.	Class.	Amount.
C. B. Edwards & Co	4	* $859. 60
T. C. Gill & Co	4	90. 00
Shoemaker & Busch	4	685. 23
Thomas Kelly	1, 2, 3	* 8, 152. 20
R. Levick's Son & Co	1	* 829. 00
A. M. Copeland & Co	4	* 306. 25
W. T. Waters & Co	4	240. 00
M. M. Sergent's Sons	4	174. 00
H. T. Kent	1	* 19, 053. 00
Louis Siehel	1	381. 00
Watsontown Boot and Shoe Co	1	* 2, 610. 00
R. G. Clarke	1, 2, 3	* 4, 624. 95
H. D. Dougherty	1	* 360. 25
T. G. Hood	1, 2, 3	* 16, 225. 70
W. H. Horstmann Co	1, 2, 3, 4	* 14, 598. 13
C. W. Hayes	1, 3	* 4, 136. 10
M. M. Michael	2	580. 75
W. Walforth	1	* 822. 00
Lyons & Healey	2	255. 00
T. B. Thompson	3	341. 40
P. J. Field	4	1, 147. 26
J. Rogers & Bro	2	184. 00
T. W. Offenhauser	1, 2	* 503. 75
R. Wurlitzer	2	* 359. 46
G. F. Roedel	1	2, 910. 00
J. J. Devitt	4	* 1, 578. 59
J. Galbraith	4	* 600. 00
A. Thomas	3	331. 21
B. Y. Pippey & Co	1	* 32, 861. 80
Manhattan Supply Co	1, 3, 4	* 28, 861. 09
J. H. Tissott, jr	1	* 4, 164. 60
J. Wannamaker	1, 2, 3, 4	* 14, 332. 49
New Britain Knitting Co	1	2, 820. 00
Cavanagh Bros. & Lynch	1, 4	* 12, 460. 73

* Accepted for part of class.

Schedule of proposals received for supply of rations for the Marine Corps for the year 1897 under advertisement from the quartermaster's office dated April 3, 1896.

Names of contractors.	Portsmouth, N. H.	Charlestown, Mass.	Brooklyn, N. Y.	Philadelphia, Pa.	Washington, D. C.	Gosport, Va.	Annapolis, Md.	Port Royal, S. C.	Mare Island, Cal.	Sitka, Alaska.	Newport, R. I.
J. C. Ergood & Co	$18. 43	*$18. 02	$21. 72	*$24. 65	$18. 72	*$16. 99	$29. 00	.....	.....	.....	$39. 00
W. H. Belford	25. 00	25. 00	21. 00	29. 00	40. 60	38. 00	39. 00	.....	.....	.....	*39. 00
F. Hume	.....	.....	.....	28. 00	16. 73	.....	*21. 73	.....	$26. 73	.....	.....
T. J. Barlow	.....	.....	.....	.....	.....	17. 20	.....	.....	.....	.....	.....
E. de Graff	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$28. 75	.....
J. T. Parker & Bro	.....	.....	.....	.....	.....	22. 00	.....	.....	.....	.....	.....
H. D. Paul	*18. 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. D. Turner & Co	.....	.....	.....	.....	.....	.....	.....	*$50. 00	.....	.....	.....
Corcoran & Collins	.....	.....	.....	.....	.....	.....	.....	.....	16. 20	.....	.....
C. A. Simmons	22. 99	18. 64	23. 00	.....	.....	.....	.....	.....	.....	.....	.....
G. Ahren's Sons	.....	.....	15. 27	.....	.....	.....	.....	.....	.....	.....	.....
C. S. Hewlett	.....	.....	.....	.....	*14. 75	.....	.....	.....	.....	.....	.....
A. Koch	.....	28. 00	*15. 25	.....	25. 00	.....	.....	.....	.....	.....	.....
M. L. Kelly	.....	.....	.....	.....	.....	.....	.....	.....	15. 99	.....	.....
J. Megarry	.....	.....	.....	.....	.....	.....	.....	.....	*15. 90	.....	.....
Wilson & Winger	.....	.....	.....	.....	.....	.....	.....	.....	17. 39	.....	.....
C. M. Prince	18. 125	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
J. Brownlie	.....	.....	.....	.....	.....	.....	.....	.....	17. 25	.....	.....
D. J. Carroll & Co	18. 98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Awarded.

Schedule of proposals received for supply of wood and coal to the Marine Corps under advertisement of the quartermaster's office dated April 3, 1896.

Names of bidders.	Wood (per cord).			Coal (per ton).						
	Oak, in stick.	Pine, in stick.	Pine (kindling), sawed and split.	Bituminous, Wellington.	Red ash (stove).	White ash (egg).	White ash (stove).	White ash (furnace).	White ash (nut).	Splint.
Marine Barracks, Portsmouth, N. H.:										
J. A. & A. W. Walker	.....	$5.40	.....	.....	.....	.....	$6.25	$5.85	.....	.....
S. G. French	$5.90	5.50	.....	.....	.....	.....	*5.84	*5.44	.....	.....
A. Stevenson	5.50	4.25	.....	.....	.....	.....	.....	.....	.....	.....
E. C. Spinney	*4.99	*4.25	.....	.....	.....	.....	.....	.....	.....	.....
Marine Barracks, Charlestown, Mass.:										
J. E. Lewis & Co	1.25	.....	$1.25	.....	.....	.....	5.82	5.32	(†)	.....
S. G. French	.....	.....	.....	.....	.....	.....	*6.98	*6.24	.....	.....
Marine Barracks, Brooklyn, N. Y.:										
H. W. Peacock	.....	.....	.....	.....	.....	$4.60	.....	.....	*$5.25	.....
S. G. French	.....	.....	.....	.....	.....	*4.12	*5.74	.....	.....	.....
M. Morgenstien	.....	*10.65	*11.45	.....	.....	.....	.....	.....	.....	.....
D. S. Wells	.....	.....	.....	.....	.....	4.20	4.83	.....	.....	.....
J. J. Convery	.....	11.00	13.70	.....	.....	4.20	*4.45	.....	.....	.....
Marine Barracks, League Island, Pa.:										
H. W. Peacock	.....	.....	.....	.....	.....	4.95	5.10	.....	4.95	.....
S. G. French	.....	.....	.....	.....	.....	4.94	5.24	.....	5.24	.....
J. J. Convery	*8.85	*8.60	.....	.....	.....	*4.80	*4.80	.....	*4.75	.....
Offices and officers' quarters, Philadelphia, Pa.:										
J. J. Convery	.....	.....	*11.90	.....	*$4.63	*4.43	.....	.....	.....	.....
Marine Barracks, Annapolis, Md.:										
J. S. M. Basil	.....	3.48	.....	.....	.....	*4.94	.....	.....	.....	.....
H. B. Myers	.....	*3.44	.....	.....	.....	5.45	.....	.....	.....	.....
Offices and officers' quarters in Washington and Georgetown, D. C., and within 1 mile of limits of said cities:										
J. B. Daish	5.20	4.90	6.00	.....	*6.00	5.20	5.35	*4.90	*4.30	.....
G. R. Sheriff	.....	.....	*5.75	.....	*5.59	5.29	*5.31	5.19	5.31	.....
Marine Barracks, navy-yard, Washington, D. C.:										
J. B. Daish	5.20	4.90	6.00	.....	6.00	5.20	5.35	4.90	*4.30	.....
J. Z. Williams	*4.50	*4.00	.....	.....	.....	5.60	5.70	5.20	5.45	.....
G. R. Sheriff	4.53	4.53	.....	.....	*5.29	*4.89	*5.19	*4.57	4.82	.....
Marine Barracks, Norfolk, Va.:										
S. G. French	.....	.....	.....	.....	.....	.....	6.28	5.98	.....	.....
G. W. Taylor & Co	.....	.....	.....	.....	.....	.....	5.97	5.47	.....	$6.49
W. & J. Parker	.....	.....	.....	.....	.....	.....	*5.72	*5.38	.....	*6.00
Officers' quarters, Norfolk, Va.:										
S. G. French	.....	.....	.....	.....	.....	.....	6.40	.....	6.40	.....
G. W. Taylor & Co	.....	.....	*6.00	.....	.....	.....	*5.88	.....	*5.63	.....
W. & J. Parker	.....	.....	7.20	.....	.....	.....	6.20	.....	6.00	.....
Marine Barracks, Mare Island, Cal.:										
S. G. French	.....	.....	.....	12.44	.....	14.44	.....	.....	.....	.....
G. W. Johnson	*8.84	*7.79	.....	.....	.....	.....	.....	.....	.....	.....
R. J. R. Aden	11.00	11.00	.....	*11.00	.....	*12.50	.....	.....	.....	.....
Newport, R. I.:										
Penninger & Manchester	*7.20	*7.20	.....	.....	.....	.....	*5.45	*5.45	.....	.....
S. G. French	.....	.....	.....	.....	.....	.....	8.98	8.98	.....	.....
Port Royal, S. C.:										
S. G. French	.....	.....	.....	.....	.....	.....	*8.50	.....	.....	.....
J. H. Averill	.....	.....	.....	.....	.....	.....	6.30	.....	(†)	.....
Sitka, Alaska.										
S. G. French	.....	.....	.....	18.40	.....	.....	.....	.....	.....	.....
E. de Graff	.....	.....	.....	*15.00	.....	.....	.....	.....	.....	.....

* Awarded

† Informal.

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